PB89-182406

Superfund Record of Decision (EPA Region 9)
MGM Brakes Site. Cloverdale, California
(First Remedial Action), September 1988

(U.S.) Environmental Protection Agency
Washington, DC

29 Sep 88

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Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R09-88/018
September 1988

PB89-182406

EPA

Superfund
Record of Decision:

MGM Brakes, CA

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15. Supplementary Notes

16. Abstract (Limit: 200 words)

The MGM Brakes site consists of a five-acre plot containing an automotive brakes casting plant, a paved area surrounding the plant, and an open field. It is located in the community of Cloverdale, California, in Alexander Valley, approximately 80 miles north of San Francisco. Forty homes, an apartment complex, a church, an animal grazing area, and several construction companies exist within a half-mile radius of the site. In addition, a 200 unit housing development is under construction immediately adjacent to the site. Surface water drainage from the site flows into Icaia Creek which flows into the Russian River. From 1965 until 1972, hydraulic fluid containing PCBs was discharged onto site property. Wastewater containing ethylene glycol was disposed onsite between 1972 and 1981. The ethylene glycol acted as a co-solvent with water, facilitating the transport of PCBs in soil. Approximately 13,510 yd^3 of soil within a 3-acre area have been contaminated with PCBs at concentrations up to 4500 ppm. The majority of contamination is present at depths of less than 5 feet (although contamination to 29 feet was found in one area). In addition, VOCs have been detected in ground water from wells on and near the site. However, the source of this contamination is unknown. The primary contaminants of concern affecting ground water are VOCs including TCE and benzene. The primary contaminants of concern affecting soil, sediments, surface water, and air are PCBs.
(See Attached Sheet)

17. Document Analysis a. Descriptors
Record of Decision
MGM Brakes, CA
First Remedial Action - Final
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Key Contaminants: PCBs

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c. COSATI Field/Group

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16. ABSTRACT (continued)

The selected remedial action for this site includes: dismantling of the MGM Brakes process building; crushing of concrete slab, and excavation of soil and of contaminated sediments in the drainage ditch containing PCBs at levels greater than or equal to 10 mg/kg, with disposal in an offsite RCRA Class II landfill if below 50 ppm and a TSCA-approved landfill if above 50 ppm; determination and removal of VOC-contaminated soil and offsite RCRA disposal; pump and treatment of ground water for PCBs and VOCs through use of an onsite mobile treatment unit and discharge to a publicly owned treatment works (POTW); soil replacement, regrading, compaction, and revegetation; offsite ground water monitoring to determine extent of VOC contamination; and development of additional remedial measures, if warranted. The estimated capital cost for this remedial action is $5,369,300 with no annual O&M costs.

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RECORD OF DECISION
DECLARATION STATEMENT

MGM Brakes Site
Cloverdale, California

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the MGM Brakes site in Cloverdale, California, developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and, to the extent practicable, the National Contingency Plan 40 CFR Part 300 (1987)(NCP). This decision is based on the Administrative Record for this site. The attached index identifies the items which comprise the Administrative Record.

Surface and subsurface soils at the MGM Brakes Site have been contaminated with polychlorinated biphenyls (PCBs) as a result of the direct discharge of wastewater containing hydraulic fluids and PCBs. PCB soil concentrations of up to 4,500 mg/kg (parts per million or ppm) have been detected, with depth of contamination down to 29 feet below ground level. Samples of the cement slab below the MGM Brakes casting facility have produced PCB levels of up to 5,400 mg/kg. PCBs continue to be released from the site in surface water runoff. PCBs have been detected in air samples collected on-site and along the borders of the site.

In addition to the PCB soil problem, chlorinated volatile organic compounds (VOCs), including chlorobenzene, dichlorobenzene, trichloroethylene, dichloroethene, and vinyl chloride have been detected in groundwater wells located on-site and immediately off-site. Benzene was also recently detected in an offsite well. The presence of the chlorinated benzenes can be associated with the release of PCBs, as chlorinated benzenes are common to PCB mixtures. The source of the benzene and the trichloroethylene, and its breakdown products dichloroethene and vinyl chloride, is not known. However, one purpose of this Record of Decision is to establish the measures which will be used to identify and remediate the VOC groundwater problem concurrently with the PCB soil problem.

DESCRIPTION OF SELECTED REMEDY

The selected remedy for the PCB contaminated soils is excavation of contaminated soils above 10 mg/kg and transport for off-site disposal at a TSCA landfill. This remedy addresses the principal threats at the site, which are exposure to PCBs via ingestion, direct contact, and inhalation pathways. Removal of the contaminated soil to a 10 mg/kg level will significantly reduce the present and future on-site risk to human health and the environment to a 10^{-5} oncogenic risk and provide unrestricted future use of the property. The remedy will also include further investigation of groundwater contamination with VOC's and restoration of groundwater up to the site boundary to the appropriate MCL or other health-based standard such that the total risk will not exceed 10^{-6}.

This Record of Decision (ROD) is based on the second Feasibility Study prepared by EPA for the site. The first Feasibility Study identified on-site incineration as the preferred remedy.

The MGM Brakes site is divided into two parcels for remediation activities. Parcel 1 is the PCB-contaminated soil exclusive of that beneath the MGM Brakes processing building and corresponding concrete slab. Parcel 2 is the contaminated soil and concrete beneath the processing building. Remediation of both parcels can occur concurrently (i.e., immediately following issuance of this ROD) or separately (i.e., remediating Parcel 1 now and delaying remediation of Parcel 2). MGM Brakes is presently manufacturing brake products at its casting facility on the site. A separate remediation of Parcel 2 would allow MGM Brakes and the local community time to plan and prepare for any disruptive effect stemming from removal of the casting building. If implementation occurs separately, remediation of parcel two will occur at a maximum of 10 years after clean-up of Parcel 1 or immediately after the casting plant is closed for business, whichever occurs first.

The major components of the selected PCB soil and VOC groundwater remedies include:

Parcel 1

- Construction of a staging area for remedial and oversight activities.
- Excavation of approximatly 10,650 cubic yards of contaminated soil containing PCBs at a level of 10 mg/kg or greater.
- Excavation of contaminated sediments in the drainage ditch leading from the site such that the requirements of the Water Quality Control Plan of the North Coast Basin are met.
- Disposal of contaminated soil to a landfill permitted to accept PCBs and in compliance with §121(d)(3) of SARA.
- Dewatering of soil excavated below five feet (approximate groundwater level) by a sump pump in conjunction with a mobile water treatment system to remove PCBs.
- Discharge of treated groundwater to a local publicly owned treatment works (POTW) or surface water body in compliance with the Regional Water Quality Control Board's (RWQCB's) Water Quality Control Plan for the North Coast Basin.
- Soil replacement, regrading, compaction, and revegetation of disturbed areas to prevent erosion.
- Confirmation sampling to ensure that a 10 mg/kg cleanup level has been achieved and that PCBs are no longer detected in groundwater and surface water.

Parcel 2

- Same excavation and dewatering activities as Parcel 1.
- Dismantling of the MGM Brakes process building.
- Crushing of concrete slab and disposal of slab and remaining contaminated soil in a landfill permitted to accept PCBs and in compliance with §121(d)(3) of SARA.

VOC Groundwater

- As part of PCB soil cleanup confirmation, analyze soil samples for the presence of VOCs to locate source of VOC spill.
- Remove VOC contaminated soils and dispose of in accordance with the Resource, Conservation, and Recovery Act (RCRA).
- Treat on-site VOC contaminated groundwater in treatment unit described above.
- Install additional down-gradient wells to evaluate extent of VOC problem.
- Develop for implementation additional remedial measures (e.g., pump and treat) if evaluation warrants.

DECLARATION

The selected remedies for Parcel 1, Parcel 2, and VOC groundwater are protective of human health and the environment, attain Federal and State requirements that are applicable or relevant and appropriate to the remedial action, and are cost effective. These remedies utilize permanent solutions and alternative treatment technologies to the maximum extent practicable for this site. Because treatment of the principal threats of the site was not found to be practicable, the selected remedy does not use treatment as a principal element of the remedy.

EPA evaluated several treatment options before reaching its decision. Incineration, EPA's first preferred alternative, would permanently destroy the wastes; however, this alternative was removed from consideration as the final remedy due to strong objections by the local community and EPA concerns regarding implementation. EPA evaluated dechlorination of PCBs using an alkaline polyethylene glycol treatment method. This alternative would also detoxify the PCBs, but was deemed impracticable due to the nature of site soils. EPA also evaluated fixation as a treatment alternative. However, because fixation: (1) would not detoxify PCBs; (2) would increase the volume of the contaminated soils; (3) would not address the principle threat at the site through treatment; and (4) would require long term monitoring, maintenance, and land use restrictions at the site, EPA rejected this alternative. EPA has identified excavation and off-site disposal as its preferred remedy.

Because the remedy will not result in hazardous substances remaining on site above health-based levels, the five year facility review will not apply to this action.

9.29.88
Date

Daniel W. McGovern
Daniel W. McGovern
Regional Administrator
EPA, Region 9

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Responsiveness Summary Exhibits

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Telephone conversation between Carl Hange, Department of WaterResources and Johanna Miller, EPA

Exhibit B - Record of Communication -
Telephone conversation between Dennis Salisbury, RWQCB, and Johanna Miller, EPA

Exhibit C - Memorandum, Sue Loyd to John Wondolleck, CDM, Regarding Wastewater Disposal for MGM Brakes Treated Groundwater

Exhibit D - Memorandum -
Gerald Hiatt to Johanna Miller, EPA, Regarding Comments on Draft FS Risk Assessment

Exhibit E - Memorandum -
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Exhibit F - Memorandum -
Phil Moyer to John Wondolleck CDM, Response to Kennedy/Jenks/Chilton Cost Comments

Exhibit G - Record of Communication -
Fred Mullins Qualtec and Sue Loyd CDM regarding Soil Volume Increase During Fixation

RECORD OF DECISION

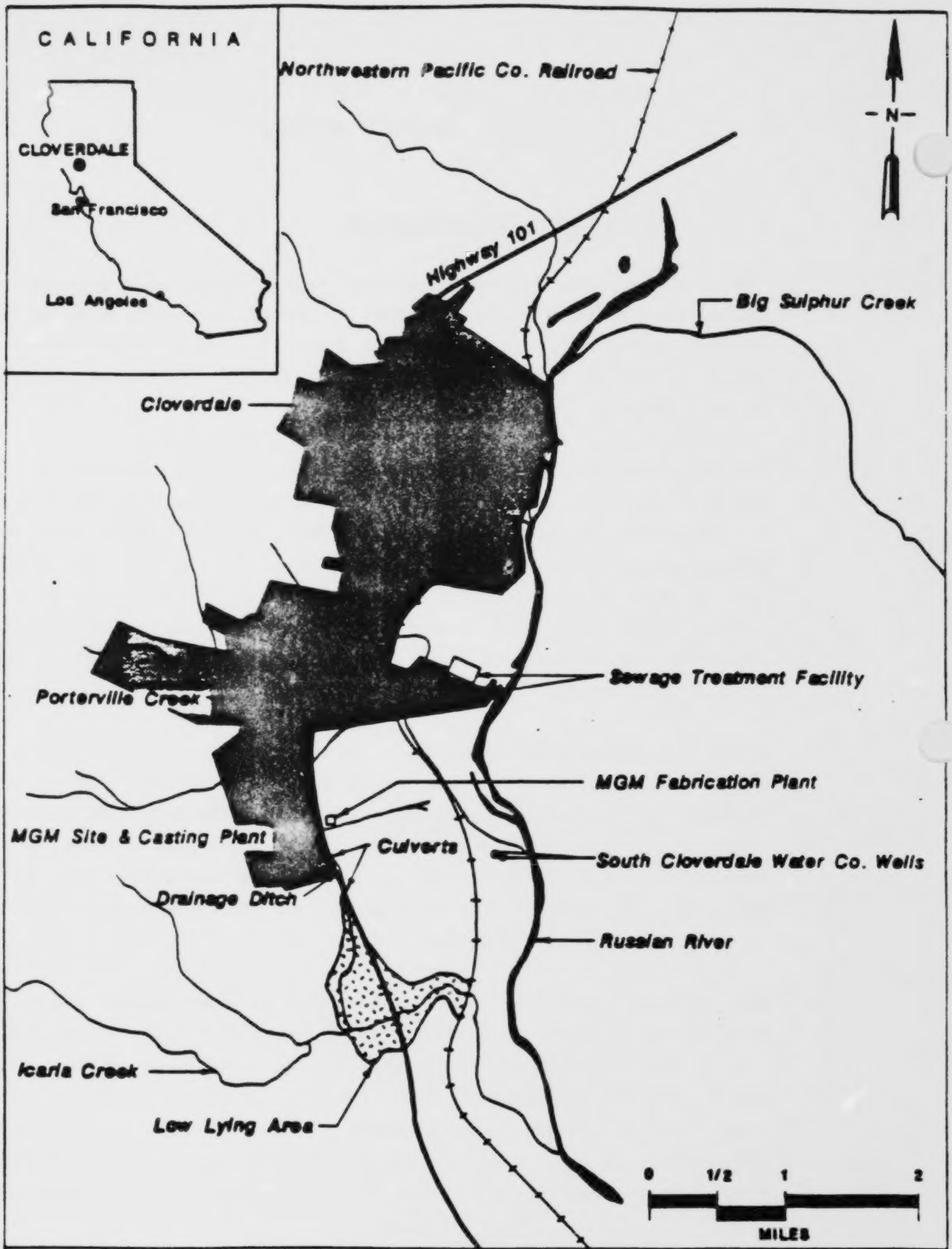
I. SITE LOCATION AND DESCRIPTION

The MGM Brakes site is located in Cloverdale, California, a northern California community in the Alexander Valley approximately 80 miles north of San Francisco (Figure 1). The MGM Brakes facilities, a portion of which comprises the MGM Brakes Superfund site, are located at the southern edge of the community.

The MGM Brakes division of Indian Head Industries, Inc. operates an assembly plant and casting plant for automotive brakes, located on the east and west sides of Highway 101. The assembly plant, a storage area, and offices occupy three acres on the east side of the highway. The aluminum casting plant and vacant field occupy five acres of land on the west side of the highway. The site consists of the five-acre plot which contains the operating casting plant, a paved area surrounding the plant, and an open field to the far west, southwest, and south of the plant (Figure 2).

Adjacent property consists mainly of residential homes and construction businesses. Within a half-mile radius of the site there are approximately 40 homes, an apartment complex, a church, a railroad track and several small construction industries. Additionally, a grazing area for cows and horses is located 100 feet northwest of the site (see Figure 2). In addition, a 200 unit housing development is under construction immediately adjacent to the northern boundary of the site.

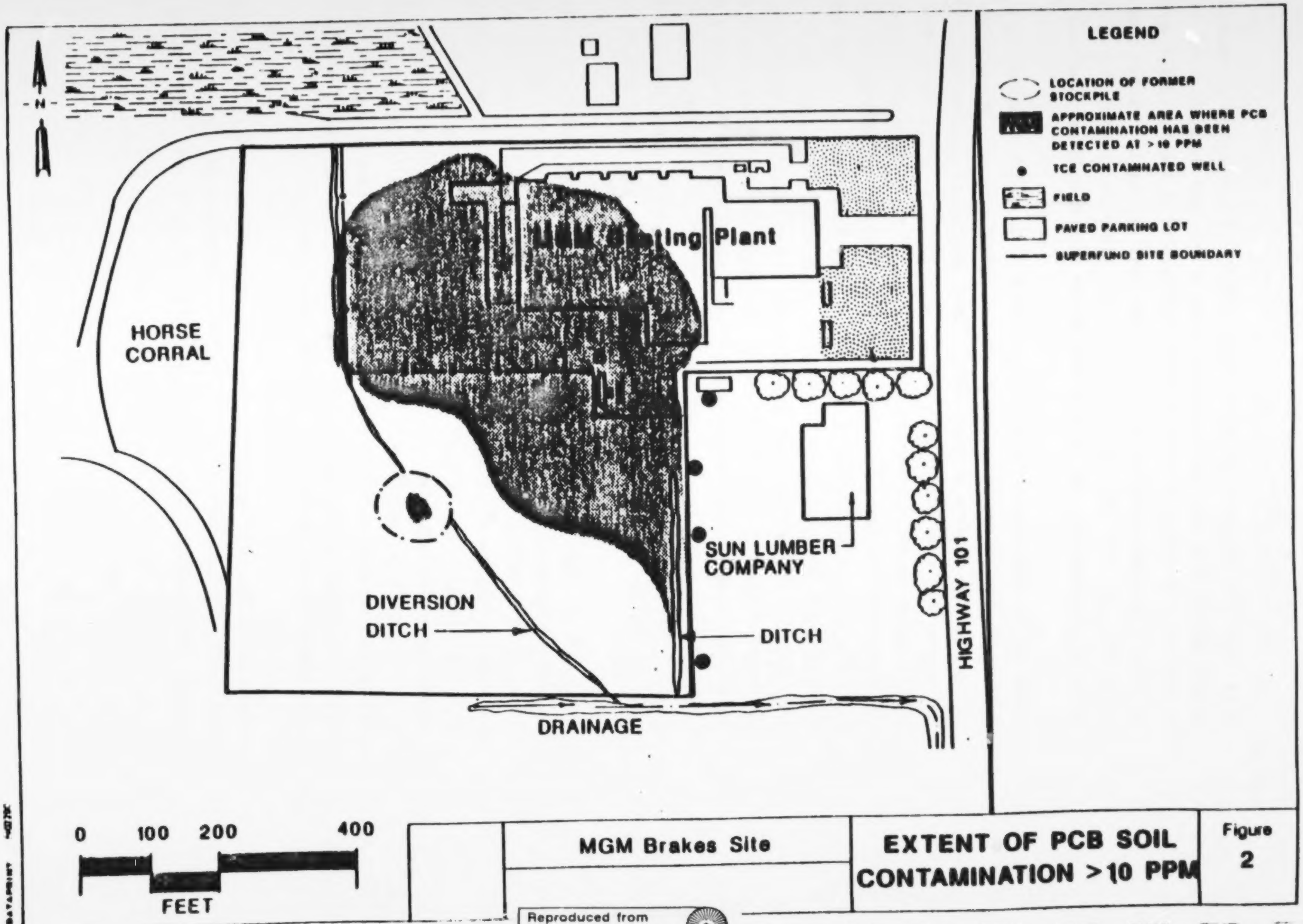
The MGM Brakes site lies on the west side of a valley through which the Russian River flows; the site is located less than 1 mile west of the river. The site does not lie on the 100 year flood plain of the Russian River. The topography of the site is relatively flat (1.0 to 1.5 percent slope), but slopes gently to the south. Surface water drainage from the MGM Brakes site flows south-southeast along a ditch paralleling Highway 101 toward Icaria Creek. Icaria Creek flows north-northeast approximately 1/2


CALIFORNIA
CLOVERDALE
San Francisco
Los Angeles
Northwestern Pacific Co. Railroad
N
Highway 101
Big Sulphur Creek
Cloverdale
Sewage Treatment Facility
Porterville Creek
MGM Fabrication Plant
MGM Site & Casting Plant
Culverts
South Cloverdale Water Co. Wells
Drainage Ditch
Russian River
Icaria Creek
Low Lying Area
0
1/2
1
2
MILES

MGM Brakes Site

LOCATION MAP

Figure 1


N
HORSE CORRAL
ting Plant
SUN LUMBER COMPANY
DIVERSION DITCH
DITCH
DRAINAGE
HIGHWAY 101
LEGEND
LOCATION OF FORMER STOCKPILE
APPROXIMATE AREA WHERE PCB CONTAMINATION HAS BEEN DETECTED AT >10 PPM
TCE CONTAMINATED WELL
FIELD
PAVED PARKING LOT
SUPERFUND SITE BOUNDARY
0
100
200
400
FEET

MGM Brakes Site

EXTENT OF PCB SOIL CONTAMINATION >10 PPM

Figure 2

Reproduced from best available copy.

mile, where it merges with Porterfield Creek. The combined streams flow approximately 3/4 mile south before flowing into the Russian River (see Figure 1). Groundwater flow is south-southeast and the hydraulic gradient in this direction is about 0.014 feet per foot during the winter and about 0.012 feet per foot during the summer. The groundwater table is rather shallow, fluctuating two to five feet below ground surface seasonally.

South of the MGM Brakes casting plant there is a slight depression. This depression drains surface water to the southeast corner. An interim drainage ditch directs surface water flows southeasterly from the northwest portion of the site plant to a west to east drainage ditch along the southernmost property boundary. This ditch drains surface water away from the site toward a drainage ditch which runs parallel to Highway 101 (Figure 1). The ditch runs southward on the west side of Highway 101. It then crosses under the highway via a culvert, runs several hundred feet southward on the east side of the highway, and then returns under the highway via another culvert to the western side of the highway. The ditch falls into a generally low lying area about one-half mile south of the site. Just further south is Icaria Creek, which flows to the Russian River. During periods of heavy rainfall, it is likely that the drainage from the ditch flows into Icaria Creek and reaches the Russian River.

The local geology of the MGM site has been interpreted through a seismic refraction survey, soil test borings, shallow test pits, and gamma logging. These tests indicate that the site is underlain by a dark gray, siltstone bedrock varying irregularly in depth from 3 to 32 feet. A very stiff, micaceous, silty clay varying in thickness from about 2 to 20 feet, depending on bedrock topography, overlies this bedrock and is a product of extensive bedrock weathering. The very stiff clay is in turn overlain to the ground surface by silty sand and clayey gravel lenses emplaced in a matrix of stiff, silty clays. The lenses do not appear to be continuous as they cannot be traced between adjacent test borings.

The area on the west and south sides of the casting plant is underlain by approximately four feet of fill. This fill consists of clays, gravels, silts, and non-toxic aluminum furnace dross (film skimmed from molten aluminum), extending approximately 60 feet beyond the southern edge of the parking lot. The fill was reportedly added in the mid-1960s and portions were paved over in the late 1960s.

II. SITE HISTORY

The land which comprises the MGM Brakes site is owned by Clover Castings, Inc., a wholly-owned subsidiary of Thyssen-Bornemisza Group, Inc. ("TBG"). The parent company of TBG is TBG Holdings, Inc. Indian Head Industries, Inc. owns and operates the casting plant on the site. The plant was formerly operated by MGM Brakes, Inc.; MGM Brakes is now a division of Indian Head Industries, Inc. The potentially responsible parties (PRPs) for the site include all of the above-referenced companies, although not all actions in this document identified as being performed by PRPs were performed by all of them.

PCB discharges occurred from 1965 to 1972. In 1972 hydraulic fluids containing PCBs were replaced with other products. Discharge of hydraulic fluids containing ethylene glycol and wastewater continued until August, 1981. Portions of the property have been found to be contaminated with PCBs as a result of the discharge of the PCB-laden hydraulic fluid.

The North Coast California Regional Water Quality Control Board (NCRWQCB) and the California Department of Fish and Game (DFG) conducted an inspection at the MGM Brakes casting plant on August 11, 1981. They noted the presence of an oily material on the soils south of the plant building. The NCRWQCB and DFG representatives informed the MGM plant manager that discharge of wastes materials on the property soils had to be discontinued and the visibly oily waste materials on the property soils had to be cleaned up.

MGM Brakes personnel scraped up the oily materials with shovels and stockpiled it on-site. MGM Brakes contacted IT Corporation in Martinez, California for waste disposal. Prior to accepting the material, IT requested that a sample of the material be sent to them for analysis. On September 28, 1981, IT Corporation informed MGM that the soil sample contained PCB.

The NCRWQCB issued Clean-up and Abatement Order #81-216 (November 1981), which required MGM Brakes to submit and execute a remedial action plan and to monitor groundwater for the presence of PCBs. These remedial activities were primarily performed by consultants to the PRPs. The site was placed on the Superfund National Priorities List (NPL) in 1983. At this time, EPA took the lead responsibility for this previously state-lead site.

EPA conducted a limited field investigation during the course of evaluating remedial alternatives. The original EPA Feasibility Study (FS) was initiated during 1985 and released in 1986. The first FS identified incineration as the Agency's preferred alternative. Due to strong opposition to incineration as well as other comments submitted during the public comment period, EPA decided to do a revised FS. The revised FS was initiated in 1987 and released for public comment in April 1988.

The following is a chronology of important MGM Brakes site activities and investigations by the PRPs, state agencies, and EPA:

Aug 1981	RWQCB and DFG inspect MGM Brakes facility and note presence of oil-stained soil.
Sept 1981	IT Corporation reports that oily soils contain PCBs.
Nov 1981	Harding Lawson and Associates (HLA) was contracted by PRPs to investigate the extent of PCB soil contamination on the site.
Nov 1981	HLA prepared a proposed sampling program in accordance with NCRWQCB clean up and abatement order No. 81-216.
Nov 1981-June 1983	HLA collected soil, surface water and groundwater samples at MGM Brakes site and the surrounding property. Kennedy Jenks Engineers (KJ) was contracted by PRPs to collect additional samples during this time period.
April 1982	HLA performed a seismic refraction study and submitted a "Remedial Action Plan."
June 1982	NCRWQCB and California Department of Health Services (DOHS) reviewed the HLA "Remedial Action Plan" and submitted comments.

Sept 1982	In response to NCRWQCB and DOHS comments on the remedial action plan, HLA performed additional sampling and submitted a "Revised Remedial Action Plan" to the NCRWQCB and DOHS.
July 1983	In response to additional sampling requests by DOHS and NCRWQCB to determine the full extent of PCB contamination and to further characterize the subsurface geology and hydrology, HLA resubmitted the "Revised Remedial Action Plan" on July 15, 1983.
Oct 1983	KJ prepared a draft report entitled "On-site Remedial Action."
Dec 1983	KJ collected additional groundwater samples.
May-Oct 1984	KJ collected additional groundwater samples.
June 1984	Kennedy Jenks Chilton (K/J/C) prepared a draft Feasibility Study (FS) based on previous investigations and submitted it to DOHS and EPA.
Oct 1984	EPA and DOHS provided comments on K/J/C draft FS and requested that the FS be revised to comply with minimum requirements.
Nov 1984	PRPs declined to prepare revised FS.
1985	EPA contracted GCA Technology Inc. to prepare an Endangerment Assessment and Feasibility Study.
Sept 1986	GCA FS was released for public comment.
Sept-Nov 1986	Public comment period on first FS.
1987	EPA contracted Camp Dresser & McKee Inc. (CDM) to revise the GCA FS to meet new requirements and address comments provided on the original FS by the PRPs and the public.
1987-1988	To complete the data base established by the first FS and to evaluate TCE contamination, CDM performed surface soil sampling, groundwater sampling, and split sampling with the PRP consultants. CDM also reviewed PRP consultants' PCB air monitoring efforts and treatability study programs.
June 1987	K/J/C and International Waste Technologies conducted bench scale fixation test of MGM Brakes contaminated soil.

Sept-Dec 1987	K/J/C and Galson Research conducted laboratory scale testing of PCB dechlorination using an alkaline polyethylene glycol mixture.
April 1988	Revised FS issued.
May-June 1988	Public comment period on Revised FS.

III. COMMUNITY RELATIONS HISTORY

EPA has carried on an extensive community relations program at the MGM Brakes Superfund site.

In the spring of 1986, EPA conducted interviews of Cloverdale community members; these interviews formed the basis of the Community Relations Plan (CRP) for the site. The CRP - completed in the fall of 1986 - described concerns of the community relating to site clean-up and EPA's plans to inform the community about current site activities and opportunities for input. EPA also established a repository for site-related documents at the Cloverdale library and compiled a site mailing list.

In September of 1986, EPA released to the public its first Feasibility Study (FS) on the MGM Brakes Superfund site. In fulfillment of community participation requirements, EPA held a public comment period from September 23 until November 29, 1986, briefings of local officials and community members, and two community meetings. One meeting was held on October 15, 1986 to present clean-up alternatives, to answer questions, and to take comments on the FS. A second community meeting was held on November 19, 1986, to present information on the health effects of PCBs and incineration emissions. Comments received on the FS focused on the following: the economic and health risks of on-site incineration; the lack of data on contaminants other than PCBs; and the failure to fully evaluate treatment alternatives other than incineration.

In the spring of 1987, broad community opposition developed to the incineration alternative, including opposition from a U.S. Congressman and State Assemblywoman. In April 1987, EPA representatives were presented with a petition containing 500 signatures opposing incineration as a clean-up alternative.

In late spring of 1987, based on the comments received on the FS, EPA decided to prepare a revised FS which would address the comments received on the first FS and also address the new requirements of SARA. A fact sheet announcing the decision and describing the additional sampling and alternatives to be evaluated was published in July of 1987. A community meeting was held on July 29 to further discuss the decision with the community.

In August of 1987, EPA conducted a community well inventory to identify and sample wells within a one-half mile radius of the MGM Brakes site.

In May of 1988, EPA released the revised FS and a proposed plan fact sheet announcing availability of the FS, and held a 35-day public comment period on the revised FS. EPA's preferred alternative in the fact sheet was excavation and off-site disposal. A community meeting on the revised FS was held in Cloverdale on May 18, 1988. Six people spoke - none in opposition to the preferred alternative. Responses to the comments received during the public comment period, including those received during the public meeting, are addressed in the attached Responsiveness Summary (Attachment B).

IV. SCOPE AND ROLE OF RESPONSE ACTIONS

Two land parcels have been identified for this selected remediation. Remediation of Parcel 1 will consist of removing and disposing the contaminated soil exclusive of the MGM Brakes processing building and concrete slab. Remediation of Parcel 2 will consist of the removal and disposal of contaminated soil beneath the processing building and removal and disposal of the concrete slab. Parcels 1 and 2 can be remediated separately or concurrently. However, due to the present occupancy of the MGM Brakes processing building, remedial action on Parcel 2 may be delayed up to ten years to provide MGM Brakes and the community ample time to plan for building demolition.

Primary threats at the MGM Brakes site as determined by EPA include exposure of MGM Brakes employees and potential future exposure of the local populace to PCB-contaminated soil and particulates. Present and potential future exposure pathways consist of inhalation of PCB vapor and particulates, dermal exposure, and ingestion of contaminated soil. VOC contamination of groundwater is also of concern. A source for TCE and benzene has not been found and site surface soils do not appear contaminated. Groundwater contains benzene, TCE and vinyl chloride at concentrations exceeding maximum contaminant levels (MCLs) (5μg/L, 5μg/L and 2μg/L, respectively). Although the site aquifer currently is not used as a drinking water supply, potential future use and effects to down-gradient aquifers require remediation of the VOC contamination.

The selected remedy, a final remedy at the site, addresses these exposure pathways or threats by removing the source of contamination. Removal of the contaminated soil will significantly reduce the potential for future exposure to contaminated soil, particulates and vapor, and will prevent migration of PCBs through surface runoff. The selected remedial measure will address the VOC problem through source identification and the evaluation of the need to pump and treat the contaminated aquifer to remove TCE, vinyl chloride, and benzene.

V. SITE CHARACTERISTICS

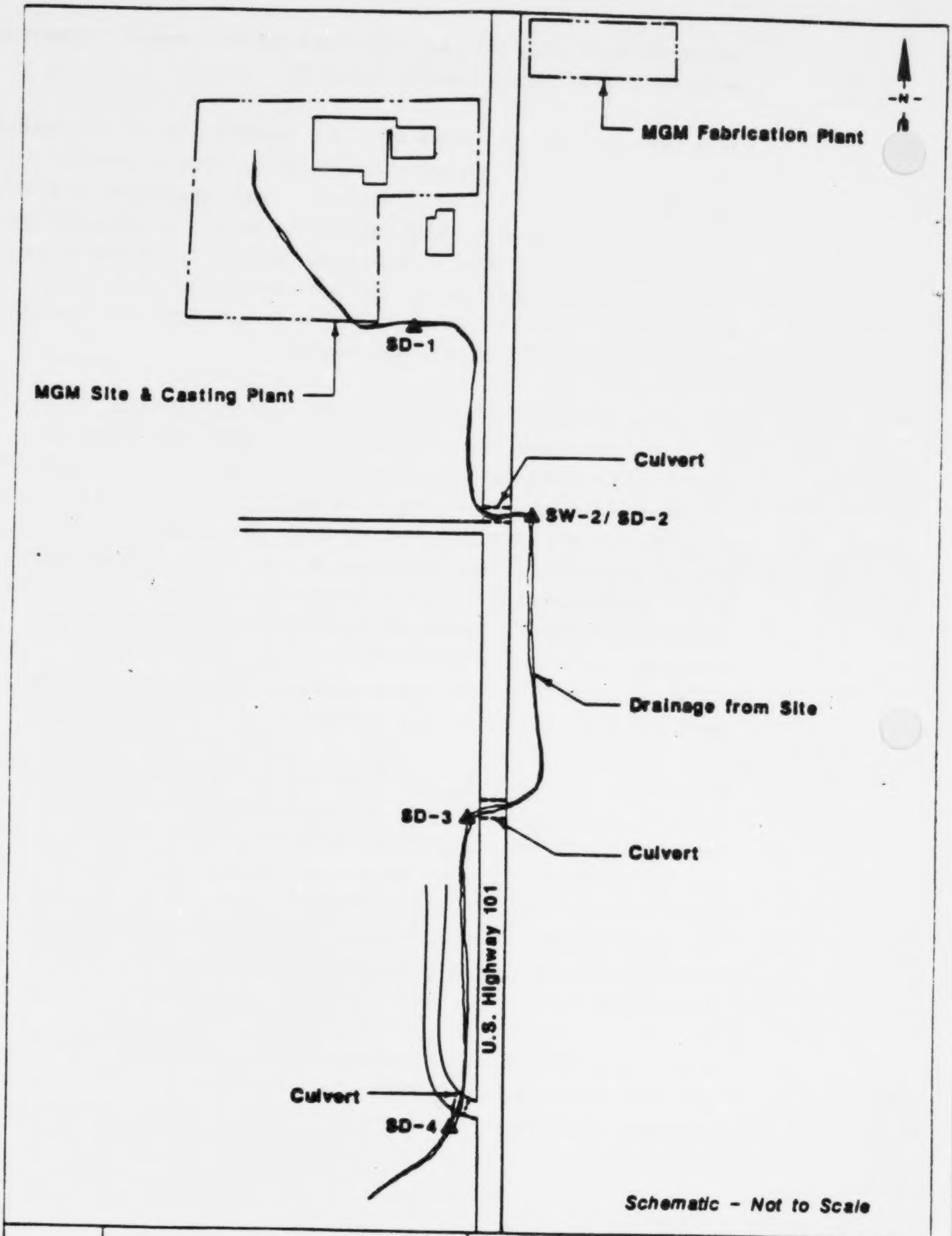
PCB contamination resulted from the discharge of hydraulic fluid containing PCBs between 1965-1972 onto property of the site. Hydraulic fluids leaked from casting machines during normal operation and were collected in sumps below the machines. The leaked fluids and wastewater were discharged onto property south of the facility through drain lines connected to the pumps. In addition to PCB hydraulic fluid, the facility also used fluids containing ethylene glycol. The ethylene glycol appears to have acted as a co-solvent with water to facilitate movement of PCBs in site soil and groundwater. As a result of co-solvent transport, PCBs moved to a depth of 29 feet, which is bedrock at the site. Discharge of ethylene glycol continued until 1981, when all discharges ceased. However, significant movement of PCBs had occurred by that time.

Affected media include on-site soil, the concrete slab of the processing building, soil beneath the processing building, on-site drainage ditches and off-site drainage ditches (Figure 2). Small quantities of PCBs have been detected in two groundwater monitoring wells. In addition, ambient air samples contained PCBs at detectable levels. During the winter of 1987-88, PCBs were detected in upgradient monitoring wells; this contamination is the result of surface water transport and flow into well casings installed below the ground surface.

The volume of contaminated soil, exclusive of that beneath the processing building, was determined to be 10,650 cubic yards (see Figure 3). Approximately 2,860 cubic yards of contaminated soil are estimated to exist beneath the processing building. The majority of contamination is present at depths of less than five feet (although contamination to 29 feet was determined at one point), but covers an area of nearly three acres. PCB soil contamination ranges from a few parts per million to 4,500 ppm. Soil contamination does not appear to be homogenously distributed and, therefore, volume estimates are difficult to make accurately. Samples collected in 1986 from the concrete slab in the casting building show a maximum PCB concentration of 5,400 mg/Kg.

PCB contamination was also identified in drainage ditches leading from the facility (see Figure 3) and in the surrounding ambient air. Hi Vol sampling methodology was employed to determine total PCBs in volatile or particulate form. PCB concentrations of up to 0.157 $\mu g/m^3$ were measured in the air at the site. Sediment and surface water in the drainage ditches were also sampled; sediment samples contained PCB concentrations of up to 5 mg/kg and on-site surface water PCB concentrations of up to 54 $\mu g/L$ (ppb) were measured.

PCBs were identified in samples from 2 of 14 monitoring wells. Well B-46 has consistently shown PCB concentrations between 0.1 to 0.5 $\mu g/L$. Monitor well B-53 was installed in September 1987 in a highly contaminated area of


-N-
MGM Fabrication Plant
MGM Site & Casting Plant
SD-1
Culvert
SW-2/ SD-2
Drainage from Site
SD-3
Culvert
U.S. Highway 101
Culvert
SD-4
Schematic - Not to Scale

SURFACE WATER
AND SEDIMENT
SAMPLING LOCATIONS

Figure
2

the site. Monitor well samples collected from B-53 have produced PCB levels ranging from 24-130 µg/L. These high results can be attributed to PCB absorbed to suspended particulate matter. Analytical results provided by PRP consultants show more than 90 percent of the groundwater PCB values are attributable to suspended sediment in the groundwater sample. The mobility of PCBs in groundwater at the MGM Brakes site is limited. PCBs have limited solubility in water and strong affinity to soil particles. Movement of PCBs in groundwater is highly attenuated, with horizontal movement estimated at 2-3 inches per year. Facilitated transport that resulted with discharge of ethylene glycol is no longer occurring due to the cessation of all discharges and natural degradation of ethylene glycol.

VOCs, including chlorobenzene, dichlorobenzene, trichloroethylene, dichloroethene and vinyl chloride, were first detected in monitoring wells on- and off-site in October of 1986. Chlorobenzenes are commonly associated with PCBs and at this site are found at low levels. The TCE and its breakdown products have been detected in wells located along the eastern boundary of the site. TCE and vinyl chloride concentrations continue to exceed MCLs.

In the May 1988 monitoring report to the NCRWQCB (transmitted to EPA on July 8, 1988) Kennedy/Jenks/Chilton reported that 16 ppm of benzene was detected in one of the off-site wells also contaminated with TCE and its breakdown products.

Most of the early site data (on which the original FS was based) was collected by consultants to the PRPs. In 1987, EPA independently validated a small proportion of water and soil analyses as an independent check on the quality of the PRP data. Out of 35 samples validated, only eight were considered to have quality control (QC) problems which made them usable for limited purposes. In 1987, EPA also collected its own confirmation on- and off-site soil and groundwater samples and off-site surface water and sediment samples. Sample results were comparable to levels detected by the PRPs, although much of the EPA data is flagged for limited uses only.

Taken together, the EPA and PRP data show clearly that the on-site soil contamination is extremely heterogeneous, with high concentration samples located next to samples with no contamination. Therefore, an important part of the final cleanup will be detailed confirmation sampling with strict Quality Assurance/Quality Control (QA/QC) checks. The groundwater results continue to show a consistent trend of PCB contamination only on-site and VOC contamination off-site with decreasing concentrations as distance from the casting building increases. Further sampling will be required as part of the remedy to determine if a source of this VOC contamination is still present and to define the lateral extent of contamination.

The air data collected by the PRPs was never independently validated by EPA so that no confirmation of the analytical accuracy can be made. However, due to the design of the sampling program, the data are only being used qualitatively as an indication of the presence of PCBs in on-site air.

VI. SUMMARY OF SITE RISK

In on-site soils, and to a limited extent near-site soils and surface water drainages, PCBs are the contaminant of concern for the MGM Brakes site. EPA has identified three major exposure pathways at the site under present and future site-use conditions. The exposure routes for the PCB contaminated soil are inhalation of vapors and particulates containing PCBs, ingestion of contaminated soil, and absorption through direct soil contact by MGM Brakes employees and the local populace. Air sampling results showed detectable levels of PCBs in the air around the site. Soil sampling results showed a significant percentage of samples with PCBs in excess of 1,000 mg/kg (1,000 ppm).

For PCBs, groundwater is not considered a major pathway for exposure. PCBs are relatively insoluble in water and exhibit a low rate of movement without facilitated co-solvent transport. The shallow aquifer present below the site is also not highly productive, exhibiting sustained yields of less than 20 gallons per hour.

The toxicity of PCBs has been well documented. Tests of acute lethality of PCB products in laboratory animals have demonstrated similar toxicological effects regardless of route of administration, species, or age of animal. Chronic exposure of laboratory animals to PCB produced alterations of the liver, thyroid, and reproductive system. Prolonged exposure to PCBs can cause a disfiguring skin illness called chloracne. Laboratory data indicates there is a potential for reproductive effects and developmental toxicity. EPA defines PCB as an animal carcinogen and a probable human carcinogen.

For the MGM Brakes site revised FS, EPA used established advisory levels for estimating cancer risk. The EPA Office of Health and Environment Assessment (OHEA) has developed advisory levels for PCBs in soil for use by EPA's Office of Emergency and Remedial Response for remediating CERCLA sites. The OHEA Assessment concluded that a PCB level of 1 to 6 ppm in soil in a residential/commercial area results in a 10^{-5} level of oncogenic risk (risk of developing cancerous tumors) for on-site exposure. For the inhalation route only, soil concentrations of 2 mg/kg (2 ppm) corresponds to a 10^{-6} risk of developing such tumors. The exposure assumptions in the OHEA document and the Spill Policy are similar to the situation at the MGM Brakes site. The site area is considered residential/commercial due to the presence of 3 residences within 100 feet of site boundaries and the presence of Cloverdale lumber immediately east of the site. Furthermore, a Cloverdale City Council member indicated to EPA that the City would prefer to have the option of using the area exclusively for residential use. A housing development of 200 units is being constructed just north of the site. Therefore, a reasonable future use scenario would be a residential area with unrestricted access.

The environmental risk associated with PCB contamination is due to its persistence in the environment and inherent toxicity. EPA has concluded that PCBs are resistant to degradation and that they bioaccumulate in the environment and bioconcentrate in the fatty tissues of organisms. PCBs have been detected in the drainage ditch leading from the site. The ditch is known to support aquatic life during the winter rainy season. Concentrations of PCBs have been detected in sediments and surface water in concentrations that violate the NCRWQCB's Water Quality Control Plan for the North Coast Basin.

Contamination of groundwater with VOCs is also of concern. TCE, vinyl chloride, and benzene all exceed established MCLs. ALthough the groundwater immediately under the site is not highly productive, the same aquifer downgradient from the site is being used as a source of drinking water. VOCs, which are highly mobile, do present a future threat to drinking water sources downgradient from the site.

VII. DOCUMENTATION OF SIGNIFICANT CHANGES

The preferred alternative for the MGM Brakes Site is off-site transport and disposal of PCB contaminated soil and remediation of the VOC contaminated groundwater. At this time no significant changes from the proposed plan have occurred.

VIII. DESCRIPTION OF ALTERNATIVES

The revised Feasibility Study for the MGM Brakes site describes 12 remedial alternatives. These alternatives address the PCB contamination at the MGM Brakes site. The site has been separated into two parcels, for remediation considerations. These parcels are:

Parcel 1 -	Contaminated soil on property exclusive of the casting building area.
Parcel 2 -	Concrete slab and contaminated soil beneath the casting building.

The remedial alternatives were developed such that sufficient labor and equipment are available to remediate the site within a seven to 18 month time frame.

Candidate remedial alternatives are described in the following paragraphs. Activities to locate the source of VOCs and remediate VOC contamination are not individually described in each remedial alternative, although they will be performed regardless of the chosen remedy. Activities to be performed to remediate the VOC groundwater problem will include analysis of soil samples for VOCs as part of PCB cleanup level confirmation sampling, installation of monitor wells to track movement of VOCs, evaluation of effects on downgradient users, and evaluation of potential remedial alternatives to restore groundwater to the MCL for TCE, vinyl chloride, and benzene.

Alternative 1-1. No Action - Parcel 1

This alternative would involve no action to treat, contain, or remove contaminated soil. Multi-media monitoring would be performed at a minimum of every five years to support a reassessment of the no action alternative.

Alternative 1-2. No Action - Parcel 2

Same as Alternative 1-1 except it applies to Parcel 2.

Alternative 2-1. Excavation of Soils > 10 ppm PCBs and Off-site Disposal - Parcel 1

This alternative will involve excavating a total volume of 10,650 cubic yards of soil containing PCBs in excess of 10 mg/kg and disposing of the soil off-site without prior treatment. Soil containing PCBs greater than 50 ppm will be transported to a Class I disposal facility with a Toxic Substances Control Act (TSCA)-permitted PCB disposal unit. Soil containing PCBs ranging from 10 to 50 ppm will be transported to a Class II facility permitted by DOHS and acceptable to the NCRWQCB. Implementation of this alternative will involve excavation, construction of a staging area, groundwater dewatering, and disposal of the contaminated soil. Wastewater from the dewatering will be treated in a mobile treatment system to remove sediments and PCBs. Treated water will either be released on site in accordance with NCRWQCB's Basin Plan or disposed of in a publicly owned treatment works. Transport of soil for off-site disposal will be performed by a state-permitted waste hauler. Once the soil and groundwater contamination has been remedied the site will no longer require long-term monitoring or deed restrictions.

Alternative 2-2. Excavation of Soils > 10 ppm PCBs and Off-site Disposal - Parcel 2

This alternative will involve the same excavation-related activities as described in Alternative 2-1. However, the volume of contaminated soil and concrete to be excavated consists of approximately 2,860 cubic yards. Prior to soil and concrete excavation activities, the processing building will be dismantled. The concrete slab will be crushed and disposed of in a TSCA facility or Class II permitted facility depending on soil concentrations of >50 or 10 to 50 ppm, respectively. Uncontaminated portions of the slab may be disposed of in a Class III landfill.

Once the groundwater contamination has been remedied the site will no longer require long-term monitoring or deed restrictions.

Alternative 3-1. Excavation of Soils > 10 ppm PCBs and On-Site Thermal Treatment - Parcel 1

This alternative would involve excavation of the same soil volumes associated with the implementation of Alternative 2-1, except that contaminated soils would be transported to a temporary storage area where they would be thermally treated and subsequently disposed of as backfill at the site. A staging area would be required. This area would be used for the temporary storage of contaminated soil prior to processing and temporary storage of the decontaminated soil pending PCB analysis and subsequent backfilling. The staging area would comply with RCRA regulations for temporary waste storage facilities. This alternative would involve the same groundwater dewatering, treatment and disposal as Alternative 2-1.

Alternative 3-2. Excavation of Soils > 10 ppm PCBs and On-Site Thermal Treatment - Parcel 2

This alternative would involve excavation activities and treated soil volumes as stated in Alternative 2-2, except that the contaminated soils would be transported to a temporary storage area where they would be thermally treated prior to being used as backfill at the site. The concrete slab would be crushed to meet the size criteria of the thermal treatment unit. The treated concrete would be disposed of in a municipal landfill. Upon completion of all thermal processing, the unit and all related equipment and facilities would be decontaminated, disassembled, and removed from the site. Long-term monitoring or deed restrictions would not be required.

Alternative 4-1. Excavation of Soils > 10 ppm and PCBs On-Site Fixation - Parcel 1

This alternative would involve excavating the same volume of soil as Alternative 2-1. Contaminated soil would be transported to an on-site storage area where it would be mixed with a fixative agent and subsequently backfilled at the site. The alternative would leave a fixed mass of concrete-like material (a monolith) to a depth of approximately 29 feet and covering at least two acres on the site. A cap of clean soil or clean fixative would be placed over the fixed monolith. Future site use would be limited by the presence of the monolith and cap.

The implementation of this alternative would involve a staging area for assembly and operation of the fixation equipment. The staging area would comply with RCRA regulations for temporary waste storage facilities. As in Alternative 2-1, wastewater generated by this process would be treated by a mobile water treatment unit and disposed of in a POTW or in accordance with the North Coast Basin Plan.

Site use would be limited due to land use restrictions, and on-site groundwater and air monitoring would be required indefinitely.

Alternative 4-2. Excavation of Soils > 10 ppm PCBs and On-Site Fixation - Parcel 2

This alternative would involve removal and crushing of the concrete slab, soil excavation of 2,856 cubic yards, along with dismantling of the casting plant building. Soil and crushed concrete would be processed through the fixation mixing equipment; the mixture would then be used to backfill the excavation. Other activities would be the same as described for Alternative 4-1.

Long-term maintenance, groundwater and air monitoring, and a land use restrictions would be required.

Alternative 5-1. In Situ Fixation of Soils > 10 ppm PCBs - Parcel 1

This alternative would involve treating 10,650 cubic yards of contaminated soil with a fixative agent injected directly into the ground. Implementation of this alternative would require in situ fixation machinery designed to inject the fixative into the soil. Minor excavation of shallow contaminated soil west of the plant would be required. This excavated soil would be placed over highly contaminated soil prior to fixation. The machinery is self-contained in that all the injection components are handled through one piece of machinery. Any wastewater generated would be used in the fixation process and wastewater disposal would not be required. A cap of clean soil or clean fixative would be placed over the fixed monolith.

As in Alternative 4-1, this alternative would require long-term groundwater and air monitoring, site access limitations, and land use restrictions at the site. Long-term maintenance of the cap would also be required.

Alternative 5-2. In Situ Fixation of Soils > 10 ppm PCBs - Parcel 2

This alternative would involve demolition of the casting plant building and removal of the concrete slab. It is not feasible to fix the concrete slab using in situ technology. Therefore, the concrete slab would be disposed of in an off-site landfill appropriate to its level of PCBs. Soil beneath the slab would be fixed in the same manner as Alternative 5-1, with clean soil or fixative placed over the monolith.

Site access would be restricted and land use deed restrictions would be required, along with long-term monitoring and maintenance of the site.

Alternative 6-1. RCRA Cap - Parcel 1

This alternative would involve capping the PCB-contaminated soil using the closure and post-closure care requirements of RCRA. A multi-layer cap would be placed over approximately three acres of contaminated area. Because most contamination exists south of the MGM Brakes building, some shallow contamination west of the building would be excavated and placed directly over the area to be capped. The area that would be capped is shown in Figure 4.

Access to the site would be restricted indefinitely. Long-term groundwater monitoring and air monitoring would be conducted to measure the effectiveness of the remedial action. Long-term maintenance, and access and land use restrictions would be required.

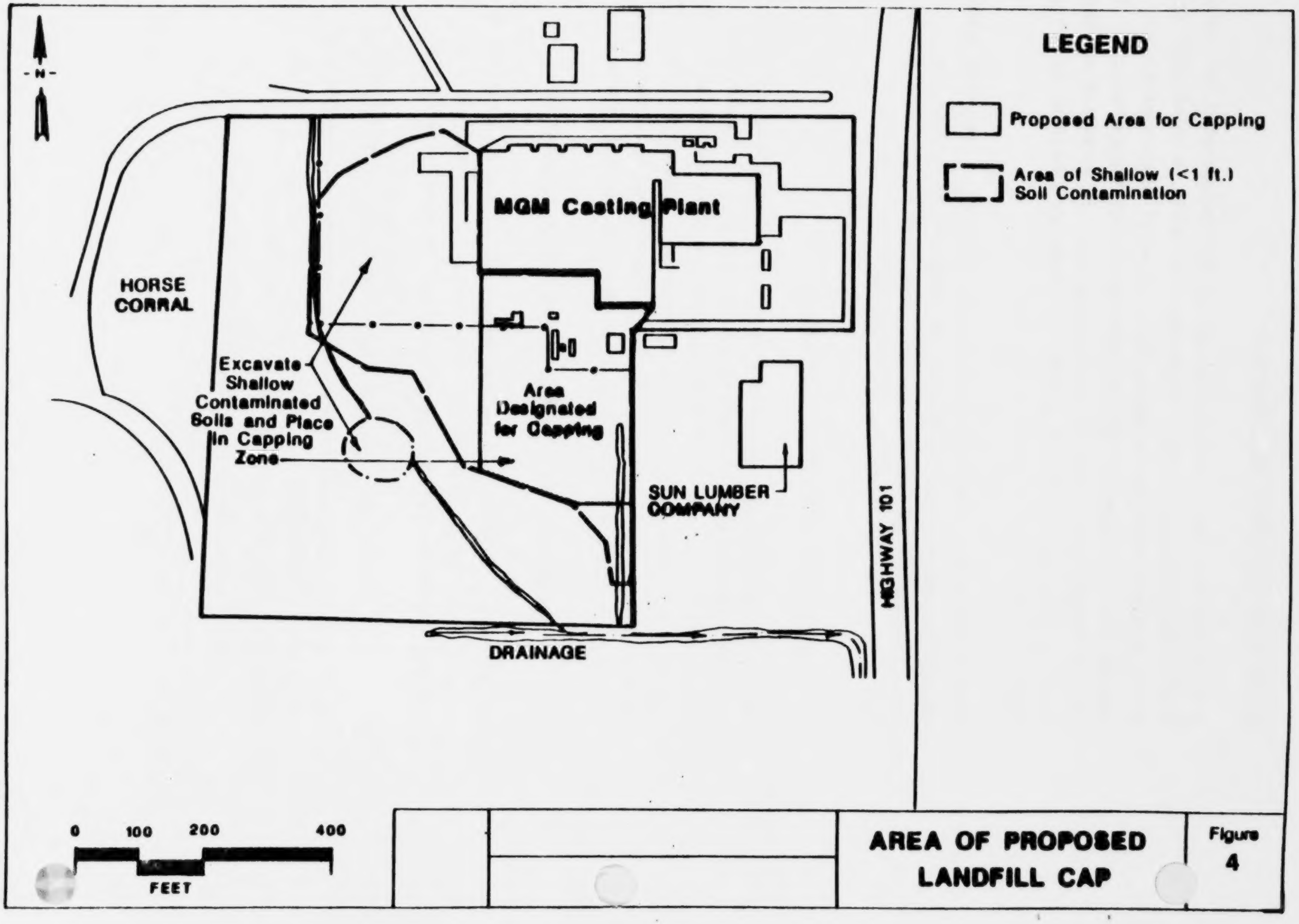
Alternative 6-2. RCRA Cap - Parcel 2

This alternative would involve the same activities associated with construction of the multi-layered cap described in Alternative 6-1. However, the building would be dismantled and the concrete slab removed, crushed, and placed over the area to be capped. Design criteria, closure requirements, access and land use restrictions, and maintenance and monitoring would be the same as those described in Alternative 6-1.

IX. SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

Listed below is an evaluation and comparison of the alternatives based on the nine key criteria which directly relate to factors §121(b)(1) (A-G) of SARA mandates that the agency assess. The nine criteria are:

1. Overall protection of human health and the environment.
2. Compliance with Applicable or Relevant and Appropriate Requirements.
3. Long-term effectiveness and permanence.
4. Reduction of toxicity, mobility and volume (TMV).


N
LEGEND
Proposed Area for Capping
Area of Shallow (<1 ft.) Soil Contamination
HORSE CORRAL
MGM Casting Plant
Area Designated for Capping
Excavate Shallow Contaminated Soils and Place in Capping Zone
SUN LUMBER COMPANY
HIGHWAY 101
DRAINAGE
0
100
200
400
FEET

AREA OF PROPOSED LANDFILL CAP

Figure 4

5. Short-term effectiveness.
6. Implementability.
7. Cost.
8. State acceptance.
9. Community acceptance.

Alternative 1-1. No Action - Parcel 1

1. Overall Protection of Human Health and the Environment

   This alternative would not reduce present or future exposure to PCBs; therefore, the threat to human health would continue to exist. Direct contact (skin adsorption), ingestion, and inhalation of PCBs would remain a human health concern. Under this alternative, the potential for off-site, contaminated soil mobility via surface runoff, air borne particulates, or volatile emissions would remain high. This alternative also does not meet the protective standard established in the Spill Policy, which has been adopted as a "To Be Considered" (TBC) criteria for the site. (See page 59 for a discussion on the Spill Policy). On the basis of this existing and potential human and environmental health risk, this alternative is not acceptable.

2. Compliance With Applicable or Relevant and Appropriate Requirements

   A No Action alternative would not meet ARARs identified for the site.

3. Long-Term Effectiveness and Permanence

   This alternative would not provide a permanent solution and would not be effective in reducing the human health threat over time.

Releases of PCBs would continue. The contamination would remain on site and a long-term monitoring program would be required.

The long-term reliability of this approach is dependent on: (1) the maintenance of the perimeter fence which would preclude direct contact with highly contaminated soils; (2) the enforcement of the land use and deed restrictions imposed; and (3) results of groundwater and air monitoring performed to document environmental degradation. Evaluation of these factors would determine the need for replacement of the No Action alternative, if it were implemented.

4. Reduction of Toxicity, Mobility, and Volume

This alternative would not employ any active treatment processes for soils. The toxicity, mobility, and volume (TMV) of contaminated soil would remain unchanged. Continued off-site dispersal of contaminants would be expected.

5. Short-Term Effectiveness

Because there would be no construction activities with the No Action alternative, there would be no incremental increase in risks to employees or residents due to implementation.

6. Implementability

The No Action alternative would be technologically feasible. Periodic site inspections, and groundwater and air monitoring programs would be established, as required by SARA. Therefore, no equipment would be required except that needed to perform monitoring.

7. Cost

Operation, maintenance, and monitoring expenses would be the only costs associated with this alternative (see Table 1).

8. State Acceptance

This alternative is expected to be negatively perceived by the State of California, because the contaminated soil is neither treated nor removed and off-site releases will continue. Therefore, the potential for exposure to PCBs would continue and long-term restrictions of on-site use would be required.

9. Community Acceptance

The no action alternative would be unacceptable to the local community. With residential development approaching the site, it is the community's desire to return the property to unrestricted use.

Alternative 1-2. No Action - Parcel 2

1. Overall Protection of Human Health and the Environment

The concrete slab below the casting building is contaminated with significantly high levels (5,400 mg/kg) of PCBs. Although the interior surface of the casting building, including the concrete slab, was cleaned in 1982, the slab is porous and, therefore, PCBs potentially could migrate up to the surface of the concrete. PCB mobility within the slab presents a potential health threat to casting plant workers from exposure. A discussion of PCB mobility in porous surfaces is presented in the Preamble to the PCB Spill Cleanup Policy. 52 Fed.Reg. 10688 (April 2, 1987).

TABLE 5-1

COST SUMMARY

Alternative	Capital Cost	O&M Cost	Present Worth 1988	Equivalent Unit Cost
1-1 No Action Parcel 1	$0	$36,000	$69,100	$7/cy
1-2 No Action Parcel 2	$0	$5,500	$10,600	$4/cy
2-1 Off-site Disposal Parcel 1	$4,079,400	$0	$4,079,400	$383/cy
2-2 Off-site Disposal Parcel 2	$1,289,900	$0	$1,289,900	$451/cy
3-1 On-site Incineration Parcel 1	$6,089,500	$0	$6,089,500	$572/cy
3-2 On-site Incineration Parcel 2	$2,341,700	$0	$2,341,700	$819/cy
4-1 On-site Fixation Parcel 1	$2,694,300	$12,700	$2,318,700	$255/cy
4-2 On-site Fixation Parcel 2	$1,365,300	$5,500	$1,375,900	$481/cy
5-1 In-situ Fixation Parcel 1	$2,847,600	$12,700	$2,872,000	$270/cy
5-2 In-situ Fixation Parcel 2	$1,104,900	$5,500	$1,115,500	$390/cy
6-1 RCRA Cap Parcel 1	$756,900	$23,500	$802,000	$75/cy
6-2 RCRA Cap Parcel 2	$335,700	$5,500	$346,300	$121/cy

In addition, if demolition of the building were to occur following termination of use as a casting facility and not as part of a remedial action, the threat to human health would increase through ingestion, inhalation, and direct contact with PCBs within and below the concrete slab.

As long as the building and slab remain, this alternative would pose a minimal threat to the environment. Contaminated surface soil is not exposed, thereby limiting the potential for surface and air borne dispersion of contaminants beneath the slab. The potential of groundwater movement at a rate of 2-3 inches per year remains. Long-term land use restrictions would be required to prevent excavation of contaminated soil.

2. Compliance with ARARs

This alternative would not meet ARARs for the same reasons discussed under Alternative 1-1.

3. Long-Term Effectiveness and Permanence

As with Alternative 1-1, this alternative would not provide a permanent solution and is not effective in protecting human health in the long-term.

4. Reduction of Toxicity, Mobility, and Volume

This alternative does not use treatment to reduce the toxicity, mobility, or volume of the contaminated soil.

5. Short-Term Effectiveness

In the short term, as long as the building remains and CAL OSHA regulations concerning worker safety are followed, there would be an extremely limited risk to human health and the environment. There would be no incremental increase in risks to employees or residents due to lack of construction activities during implementation.

6. Implementability

Same as described for Alternative 1-1.

7. Costs

As with Alternative 1-1, the only costs associated with this alternative would be operation and maintenance of a monitoring program (see Table 1).

8. State Acceptance

State perception of this alternative is expected to be the same as Alternative 1-1.

9. Community Acceptance

Although some members of the community have expressed their desire to have the site remediated as quickly as possible, some members of the community have also expressed concern over the possible loss of jobs if the facility were to be dismantled. No action may be acceptable to some community members if loss of the business were to result in a loss of jobs.

Alternative 2-1. Off-site Disposal - Parcel 1

1. Overall Protection of Human Health and the Environment

This alternative will meet the TBC Spill Policy and, therefore, will be protective of human health and the environment. It will eliminate the source of contamination above 10 ppm, thereby significantly reducing the potential for future exposure to contaminated soil, runoff, particulates, or vapors at the site.

Although short-term construction impacts may effect the biota of the site, the site is expected to be fully restored with respect to the environment.

Contaminants will be moved to a controlled landfill that has long-term monitoring and land use restrictions already in place. Human health and the environment at the landfill will be protected due to the engineering design criteria of the disposal unit and the regulatory mechanisms to enforce the monitoring requirements.

2. Compliance with ARARs

This alternative can be implemented to meet all ARARs. Contaminated soil with PCBs greater than or equal to 50 ppm will be disposed of in a landfill meeting the TSCA/RCRA requirements. The disposal from this site of contaminated soil of less than 50 ppm PCBs are not regulated under TSCA. Under the CA DOHS Disposal Policy No. 81-2A, PCBs in soil at less than 50 ppm must be disposed of in landfills specifically designated for PCB disposal. These landfills are regulated by the RWQCB and each waste must be approved by the Board for disposal at non-TSCA/RCRA landfills. Excavation and disposal activities will be performed to meet the federal and state remedial action requirements pertaining to handling, such as DOT 40 CFR §267.3, 40 CFR §263, 40 CFR §172, 40 CFR §173 and §177; OSHA 29 CFR §1926, subpart C; and RCRA 40 CFR §261.

3. Long-Term Effectiveness and Permanence

This alternative offers significant long-term protection of human health for the Cloverdale community. The source will be removed to a 10 ppm level and the potential for future exposure to contaminated soil, runoff, particulates, or vapors will be significantly reduced at the site. Contaminants will be placed within a controlled environment, allowing unrestricted use of the site. Because contaminants are not treated but transferred to an off-site disposal facility, this alternative is not a permanent remedy. The advantages of transporting the contaminated soil off-site are that the disposal facilities are better suited technologically and institutionally to mitigate any potential hazard posed by the contaminated soil. In this manner, the alternative will provide a permanent solution at the site. Long-term monitoring will not be required for the site.

4. Reduction of Toxicity, Mobility, and Volume

This alternative will not employ any active treatment process to reduce toxicity, mobility, and volume of contaminated soils. By placing PCBs in a secure landfill with engineering controls, the potential for mobility of the PCBs will be reduced.

5. Short-Term Effectiveness

This alternative will have minimal short-term impacts. Excavation activities will increase the risk of exposure of workers and residents to contaminated soil and groundwater as well as volatile and particulate PCBs. The exposure risk will be controlled by various actions such as implementing proper health and safety procedures for excavation, dust control, misting soil, and using trucks with protective linings, seals and tarpaulins.

Actual soil excavation activities will have minimal short term impacts on the environment of the site. Biota displaced during excavation activities can return following restoration. Regrowth would be promoted by the addition of mulching and seeding.

6. Implementability

The resources for implementing this alternative are readily available. There are sufficient hazardous waste clean-up contractors to implement the excavation and transportation activities. However, a limiting resource may be landfill disposal capacity. The Feasibility Study identified three landfills that will accept PCB waste. Permitting status or capacity may change at any of these landfills. In addition, two landfills were identified that can accept soils containing less than 50 ppm. Approval to dispose of PCB-contaminated soils must be obtained from DOHS and the RWQCB. These approval can take three months to two years to obtain.

7. Cost

Transport and disposal costs represent nearly 53 percent of the total costs for this alternative. The soil with concentrations greater than 50 ppm (approximately 4,260 cy) must be disposed of in a TSCA facility. The nearest facility is Kettleman Hills (approximately 300 miles). The unit cost used for transport and disposal at Kettleman Hills was provided for costing purposes; the actual cost may vary. An additional $25/cy was added to the quoted price to cover the cost associated with lining the trailers with a PVC liner, as required by DOT regulations. There are approximately 6,390 cy of PCB contaminated soil with concentrations of between 10 and 50 ppm that would be disposed of at a Class II or Class III facility. Based on quotes provided by approved facilities, the cost for disposal at such landfills was estimated to be 30 percent less than disposal at a TSCA approved facility (see Table 1).

8. State Acceptance

This alternative is expected to be favorably perceived by the State because the health threat represented by contaminated soil will be removed.

9. Community Acceptance

This alternative has been very favorably received by the community. This alternative allows unrestricted future use of the site, which members of the community have expressed as a desireable goal. Members of the community living near the site may be inconvenienced over the short-term during remedial implementation due to noise and truck traffic. Air monitoring will be implemented to ensure that dust levels do not pose a risk to these nearby residents. Because the site is on the southern end of town, the overall community will not be affected by the resulting traffic.

Alternative 2-2. Off-Site Disposal Parcel 2

1. Overall Protection of Human Health and the Environment

This alternative, like Alternative 2-1, will remove a large portion of contaminated soil, thus significantly reducing the potential for future exposure to contaminated soil, runoff, particulates or vapors at the site.

2. Compliance with Applicable or Relevant and Appropriate Requirements

Compliance would be the same as for Alternative 2-1.

3. Long-Term Effectiveness and Permanence

This alternative will achieve the same beneficial long term goals and permanent source removal from the site as Alternative 2-1.

4. Reduction of Toxicity, Mobility, and Volume

This alternative will not use treatment to reduce toxicity, mobility, or volume of contaminants. By removing the PCBs to controlled landfills, mobility of contaminants will be reduced.

5. Short-Term Effectiveness

The short-term impacts of this alternative are equivalent to Alternative 2-1.

6. Implementability

Implementation requirements for this alternative are equivalent to Alternative 2-1.

7. Cost

This alternative has been costed in the same manner as Alternative 2-1. Differences between the two alternatives involve the volume of soil to be transported to a TSCA facility (1,140 cy) and the volume of soil and concrete to be transported to a Class II or Class III facility (1,720 cy). In addition, the cost of demolition of the 5,000 square feet (sq. ft.) casting building and concrete slab does not include moving the interior components or reconstruction of the building. Costs assume disposal of the building and concrete at a TSCA landfill (see Table 1).

8. State Acceptance

The state's acceptance of this alternative is expected to be the same as it is for Alternative 2-1.

9. Community Acceptance

Overall, the community's acceptance of this alternative is expected to be favorable. However, because demolition of the building may result in closure of the casting plant, portions of the community may object to the possible loss of jobs. To allow the community and MGM to plan for implementation of this alternative, EPA is allowing the alternative to be implemented any time during the next ten years.

Alternative 3-1. On-Site Thermal Treatment-Parcel 1

1. Overall Protection of Human Health and the Environment

This alternative would provide the best overall human health and environmental protection because thermal treatment would destroy all PCBs over 10 ppm, and the site could be returned to unrestricted use. This alternative would meet the criteria of the TSCA Spill Policy.

2. Compliance with Applicable or Relevant and Appropriate Requirements

This alternative would be performed to meet OSHA health and safety requirements, federal and state air emission standards, including TSCA/RCRA PCB thermal destruction removal efficiency (DRE) of 99.999 percent, and other RCRA treatment, storage and and disposal requirements.

3. Long-Term Effectiveness and Permanence

This alternative offers significant long-term protection of public health. All soil PCBs exceeding 10 ppm would be destroyed, thus providing a permanent solution. PCB toxicity, volume and mobility would be significantly reduced through treatment; the potential for future exposure would also be significantly reduced. The site would be returned to unrestricted use and long-term monitoring and maintenance for PCB control at the site or at an off-site disposal facility would not be required.

4. Reduction of Toxicity, Mobility, and Volume

This alternative uses treatment to significantly reduce the toxicity, mobility, and volume (TMV) of the waste.

5. Implementability

The use of mobile treatment systems is a relatively new approach. To date, only eight mobile thermal units are currently in service. Vendors of thermal units have been identified for the MGM Brakes site. It is expected that a mobile unit would be available or could be fabricated in a reasonable time period for use at the MGM Brakes site. Administratively incineration is difficult to implement. Satisfaction of substantive permit requirements typically takes up to two years to accomplish.

6. Short-Term Effectiveness

This alternative would have short-term risks associated with excavation and soil processing activities, along with potential short-term air impacts resulting from thermal treatment. Pollution control equipment would require detailed monitoring and maintenance to minimize air impacts. Traffic impacts to the southern part of Cloverdale would be less than with alternative 2, since soil is not being transported, but treated on-site.

7. Cost

On-site incineration would require extensive mobilization and set up of equipment. System mobilization cost is high at $250,000.

The incineration process represents 56 percent of the total cost or $3,395,000 (see Table 1).

8. State Acceptance

Assuming that all necessary air quality standards are met, it is expected that the state would accept incineration as a permanent remedy for the site.

9. Community Acceptance

Although the end point of this alternative would be a permanent solution, representatives of the community have already expressed strong opposition to the placement of a temporary incinerator at the site. Opposition included letters from local, state, and U.S. politicians, as well as a petition signed by members of the community.

Alternative 3-2. On-Site Thermal Treatment - Parcel 2

1. Overall Protection of Human Health and Environment

This alternative would offer the same protectiveness as is offered by Alternative 3-1.

2. Compliance with ARARs

The only remedial activity under this alternative that differs from those under Alternative 3-1 would be the demolition of the processing building and concrete slab. These activities would be performed to meet state and federal DOT, OSHA, TSCA and RCRA requirements.

3. Long-Term Effectiveness and Permanence

This alternative would offer the same long-term effectiveness and permanence as Alternative 3-1.

4. Reduction of Toxicity, Mobility and Volume

This alternative would use treatment to significantly reduce contaminant toxicity, mobility, and volume.

5. Short-Term Effectiveness

The short-term impacts of this alternative would be the same as those for Alternative 3-1.

6. Implementability

Implementation requirements for this alternative would be the same as Alternative 3-1, except that additional construction services would be required for demolition of the processing building.

7. Cost

The major costs associated with the alternative are for system mobilization and incineration processing. These two items represent 47 percent of the total cost or $1,108,000. This alternative contains no operation and maintenance costs because contaminated soils and concrete would be treated so that the PCBs are completely detoxified (Table 1).

8. State Acceptance

State acceptance would be the same as for Alternative 3-1.

9. Community Acceptance

The community's perception of this alternative is negative.

Alternative 4-1. On-Site Fixation - Parcel 1

1. Overall Protection of Human Health and Environment

This alternative would reduce but not eliminate exposure risks associated with PCB-contaminated soil. In tests performed by K/J/C (1988), PCBs were not chemically fixed to the matrix, but instead remained leachable. Air emissions of PCBs from soil samples treated with the fixative were still detected after treatment, but at reduced rates compared to unfixed soil. The potential public health risk associated with ingestion would also be reduced because direct soil contact would be eliminated by placing and maintaining a cover over the fixed soil. This alternative reduces mobility, but no evidence exists that it would significantly reduce the toxicity of the waste. This alternative would require long-term monitoring to assure the integrity of the fixed monolith and a cover to ensure that air emission levels do not exceed those that would pose a public health risk.

The creation of a solidified block would make the area unsuitable for habitation by burrowing animals.

2. Compliance with ARARs

The excavation and treatment process associated with this alternative would be performed to meet action-specific state and federal, OSHA, and RCRA requirements. Pursuant to 40 CFR §761.75(c)(4), the following TSCA landfill disposal requirements would be waived: 40 CFR §761.75(b)(1), (2), and (3).

3. Long-Term Effectiveness and Permanence

This alternative would require long-term on-site monitoring, land use restrictions, site access restrictions, and site maintenance to ensure its long-term effectiveness. This alternative does not use treatment as a principle element to significantly and permanently reduce the principal threats at the site, and, therefore, it would not result in a permanent remedy. PCBs are made more suitable for long-term storage by rendering them less leachable, but this alternative does not detoxify PCBs.

In the long term, this alternative, if properly monitored and maintained, would be effective in reducing the potential exposure risks to the public. Fixation with a cap would reduce the potential for migration of PCBs via any media.

4. Reduction of Toxicity, Mobility, and Volume

This alternative does use treatment to reduce the mobility of PCBs in soil. Fixed soil may be less toxic to humans because the fixed material may be less readily absorbed in the digestive tract. However, available data is inconclusive on whether this technology reduces toxicity. Volume is not reduced, but is actually increased because the PCB fixative agent added to the soil would increase bulk up to 25-30 percent.

5. Implementability

The personnel expertise and equipment to perform fixation following excavation are available from a limited number of firms across the country. The availability of mixing units may be a limiting factor. The resources for excavation activities are readily available.

6. Short-Term Effectiveness

This alternative would have the same short-term impacts associated with excavation as Alternative 2-1, with the exception of less traffic. Vegetation removal would be the only short-term environmental impact. The excavation of large volumes of soil would create a potential for exposure. This potential would be mitigated through implementation of proper health and safety practices and dust control measures.

7. Cost

The following costs are estimated for this alternative:

*System mobilization costs	$ 100,000
Staging and storage areas	50,000
O&M cost ($100/cubic yard)	12,700
Fixation process cost	1,065,000

Five percent has been included in the capital cost (see Table 1) to cover pilot study.

*Unit cost obtained from Pepper's Steel & Alloys site, Florida

8. State Acceptance

State acceptance of this alternative is anticipated to be low because of the need for long-term monitoring and enforcement of site restrictions.

9. Community Acceptance

The community's perception of this alternative is expected to be less favorable than its perception of off-site disposal. The community prefers an alternative which eliminates the problem at the site, in contrast to one which results in minimizing the problem, but still leaves contaminated soil at the site. During the most recent public comment period and community meeting, no comments were received regarding fixation, exclusive of those received from the PRP. City Council members have stated to EPA that they prefer an alternative allowing unrestricted use. Some community members had previously indicated preference for fixation over incineration.

Alternative 4-2 On-Site Fixation - Parcel 2

1. Overall protection of human health and the environment

Overall protection from this alternative would be the same as Alternative 4-2, except that biota and vegetation are not associated with the building, so they would not be impacted.

2. Compliance with ARARs

The only activities that vary from those under Alternative 4-1 would be activities related to the processing building and concrete slab. These activities would be performed to meet state and federal OSHA, TSCA, and RCRA handling requirements. As with Alternative 4-1, the TSCA landfill requirements related to groundwater protection [i.e., 40 CFR §761.75(b)(1), (2), and (3)] would be waived, pursuant to 40 CFR §761.75(c)(4).

3. Long-Term Effectiveness

As with Alternative 4-1, this alternative would not provide a permanent solution for the site. It has the same long term effectiveness as Alternative 4-1, that is, contaminant exposure would be reduced, but the alternative would require enforcement of long-term monitoring requirements and land use restrictions.

4. Reduction of Toxicity, Mobility, and Volume

This alternative would have the same effectiveness in reducing TMV as Alternative 4-1.

5. Implementability

Implementation requirements for this alternative would be the same as for Alternative 4-1, in addition to construction services required to demolish the building.

6. Short-Term Effectiveness

The short-term effectiveness of this alternative would be equivalent to that of Alternative 4-1.

7. Cost

Cost assumptions for this alternative are similar to Alternative 4-1, except that additional costs for building demolition and disposal are required. Costs are presented in Table 1.

8. State Acceptance

State acceptance is expected to be less for this alternative compared to other alternatives which remove or treat the waste, due to the need to enforce long-term land use restrictions and monitoring requirements at the site.

9. Community Acceptance

As with other alternatives for Parcel 2, community acceptance of this alternative may be low because the alternative would result in the removal of the casting plant building, and implementation could result in a loss of jobs. Otherwise, the community's perception of this alternative is expected to be the same as Alternative 4-1.

Alternative 5-1. In Situ Fixation - Parcel 1

1. Overall Protection of Human Health and the Environment

   - Overall protection from this alternative would be potentially less than that of Alternative 4-1, on-site fixation. Due to the stiff, clayey nature of soils at the site, and the experience gained in the KPEG testing, it doesn't appear possible to fix soils as completely as for the on-site excavation and fixation process. Adequate reduction of mobility would be questionable and is expected to be less than that for excavation and fixation. The exact effect of this non-homogenous mixing on air emissions is unknown but presumably emissions would be higher than for Alternative 4-1. The cap placed over the fixed monolith would reduce the threat from direct contact and emissions.

2. Compliance with ARARs

   As with Alternative 4-1, this alternative would meet all ARARs. The TSCA disposal requirements found in 40 CFR §761.75(b)(1), (2), and (3) would be waived, pursuant to 40 CFR §761.75(c)(4).

3. Long-Term Effectiveness and Permanence

   This alternative would require long-term on-site monitoring, land use restrictions, site access restrictions, and site maintenance, in order to remain effective in protecting human health and the environment.

   The creation of a solidified block would make the area unsuitable for habitation by burrowing animals.

   This alternative is expected to offer slightly less long-term effectiveness than Alternative 4-1, due to the inability to completely mix the fixative and soil in situ. This alternative does not detoxify the PCBs and does not use treatment as a principle element to significantly and permanently reduce the principal threats at the site. Therefore, in situ fixation would not result in a permanent remedy.

4. Reduction of Toxicity, Mobility, and Volume

Reduction of toxicity and volume would be similar to that of Alternative 4-1. Reduction of mobility may be less for this alternative, because fixation may not be as complete as for on-site excavation and fixation.

5. Implementability

The personnel expertise and equipment to perform in situ fixation are available, but limited. Two Bay Area firms which might be available to perform this type of remedy have been identified, however, they have only one or two in situ units available. As in Alternatives 3-1, 4-1 and 5-1, excavation resources to consolidate contaminated materials are readily available.

6. Short-Term Effectiveness

The short-term impacts from this alternative differ from Alternative 4-1 in that potential short-term exposure to workers and adjacent residents would be less. Highly contaminated soil would not be excavated and there is less risk of dust generation, as only minor soil excavation is required.

7. Costs

Based on discussions with the limited available vendors, costs for the in situ fixation process are highly variable. Actual pilot tests would have to be performed at the MGM Brakes site in order to better estimate the cost. System mobilization cost is estimated at $120,000. O&M costs for this alternative are identical to those of Alternative 4-1 (see Table 1).

8. State Acceptance

State acceptance is expected to be low due to the need to enforce long-term monitoring and land use restrictions at the site.

9. Community Acceptance

The community perception of this alternative is generally equivalent to that of Alternative 4-1. Although in the short-term there would be less exposure to workers and adjacent residents compared to excavation, in the long-term this alternative does not provide a permanent solution for the site, and requires land use restrictions.

Alternative 5-2. In Situ Fixation - Parcel 2

1. Overall protection of human health and the environment

Overall protection from this alternative would be the same as described for Alternative 5-1.

2. Compliance with ARARs

The issues relative to ARARs and other institutional requirements are the same as for Alternative 5-1.

3. Long-Term Effectiveness and Permanence

The long-term effectiveness of this alternative is the same as Alternative 4-2. It does not provide a permanent solution and requires long term monitoring, and site access and land use restrictions.

4. Reduction of Toxicity, Mobility, and Volume

Toxicity and volume reductions are the same as those for Alternative 5-1. Depending on the depth of contamination below the slab, mobility reduction could be less than for Alternative 4-2.

5. Implementability

The resources required for this alternative are the same as those required for Alternative 5-1, including construction services to demolish the building. The limiting factor would be availability of in situ equipment.

6. Short-Term Effectiveness

The short-term impacts for this alternative would be greater than those associated with Alternative 5-1 due to the need to remove the concrete slab. Overall potential short-term exposure to workers and adjacent residents is expected to be less than complete excavation, however.

7. Costs

Cost assumptions are similar to Alternative 5-1 with the exception of the need to demolish and dispose of the building and slab. O&M costs will be identical to those described for Alternative 4-2 (see Table 1).

8. State Acceptance

State acceptance is expected to be low due to the need to enforce long-term monitoring and land use restrictions.

9. Community Acceptance

The community's perception of this alternative is expected to be the same as for Alternative 4-2.

Alternative 6-1. RCRA Cap - Parcel 1

1. Overall Protection of Human Health and the Environment

Capping of the site would reduce mobility of contaminants through surface runoff. A cap would also reduce air emissions. Horizontal groundwater mobility of contaminants would not be reduced and contaminants would remain in direct contact with site groundwater. This alternative would not comply with the TSCA Spill Policy TBC criteria for the site. Overall protectiveness offered by this alternative could only be maintained through long-term land use restrictions, maintenance, and site monitoring. This alternative presents the greatest potential for release of contaminants and exposure to PCBs should the cap fail, be damaged, or be removed. The alternative does not use treatment.

2. Compliance with ARARs

Construction of a multi-layered cap over the contaminated soil meets all ARARs.

3. Long-Term Effectiveness and Permanence

This alternative would not provide a permanent solution. Capping the site could provide an acceptable means of eliminating exposure to contaminated soils via potential ingestion, direct contact and inhalation pathways. However, to ensure long-term protectiveness, land use and access restrictions, monitoring and maintenance would be required in perpetuity.

4. Reduction of Toxicity, Mobility, and Volume

This alternative would not use treatment to reduce toxicity, mobility, or volume. However, the cap would restrict potential human contact with contaminated soil, reduce surface water run-off and infiltration, and emissions of air borne PCBs. Groundwater mobility would not be reduced.

5. Implementability

The equipment, materials and personnel necessary for the construction of a cap would be available through local markets. It is not anticipated that resource limitations will present a problem.

6. Short-Term Effectiveness

The short-term impacts for capping fixation would be the same as those for Alternative 5-1. Potential public health risks associated with the consolidation of contaminated soil would be minimized through standard work practices.

7. Costs

This alternative would involve covering two acres of contaminated soil with a RCRA cap. A RCRA cap would be the least costly of the action alternatives. O&M costs include a site investigation at a minimum of every five years to evaluate the integrity of the cap and to take perimeter soil samples and groundwater samples (see Table 1).

8. State Acceptance

State acceptance is expected to be low due to the need to enforce long-term monitoring requirements and land use restrictions.

9. Community Acceptance

Based on the comments received during the first public comment period, the community's perception of this alternative is not favorable. Like Alternative 4-1 and 5-1, the remedial action would not result in a permanent solution, nor would it allow unrestricted future use of the site.

Alternative 6-2. RCRA Cap - Parcel 2

1. Overall Protectiveness of Human Health and the Environment

Overall protectiveness of this alternative would be the same as that for Alternative 6-1.

2. Compliance with ARARs

The issues relative to ARARs are the same as those for Alternative 6-1.

3. Long-Term Effectiveness and Permanence

The long-term effectiveness of this alternative would be the same as that for Alternative 6-1. This alternative would not be a permanent solution.

4. Reduction of Toxicity, Mobility, and Volume

Reduction of TMV for this alternative would be the same as that for Alternative 6-1.

5. Implementability

The resources required for this alternative would be the same as those required for Alternative 6-1, in addition to construction services required to demolish the building.

6. Short-Term Effectiveness

The short-term effectiveness associated with this alternative would be the same as that for Alternative 6-1.

7. Cost

Cost assumptions for a RCRA cap for Parcel 2 are similar to those for the RCRA cap for Parcel 1, with the additional cost of dismantling the building. The cap would cover approximately 5,000 square feet of the contaminated portion of the building. O&M costs would be similar to those described in Alternative 4-2 (see Table 1).

8. State Acceptance

State acceptance is expected to be the same as for Alternative 6-1.

9. Community Acceptance

The community perception of this alternative is expected to be the same as for Alternative 6-1. In addition, if the implementation of the alternative resulted in the loss of jobs, the alternative would be perceived less favorably by the community.

X. THE SELECTED REMEDY

Based on the analyses in the revised FS and public comments received, EPA's selected remedy for the MGM Brakes site is excavation and off-site disposal of soils contaminated above 10 ppm PCBs. Soils will be excavated to a depth of at least five feet for most of the contaminated portions of the site, with limited areas being excavated down to 29 feet. The soil excavation will encounter groundwater at five feet, which will require dewatering of the deeper excavation. Groundwater pumped from the excavation will be treated to remove suspended sediment, PCBs, and VOCs.

Soil containing less than 50 ppm PCBs will be disposed of in a Class II landfill, approved by the RWQCB. Soil contaminated with PCBs at concentrations greater than or equal to 50 ppm PCBs will be disposed of in a TSCA-approved disposal facility in compliance with §121(d)(3) of SARA. The excavated areas of the site will be backfilled with clean soil which will meet a less than 1 ppm PCB criteria. The site will then be fully regraded and seeded to ensure growth of grasses to minimize erosion.

The remedy will also include excavation and off-site disposal of contaminated sediments such that the requirements of the NCRWQCB's Water Quality Control Plan are met.

The selected remedy also includes measures for locating and remediating the VOC contamination at the site. Activities involved with this remediation include locating the source of the VOC spill, removal and treatment/disposal of VOC contaminated soil, evaluation of the extent of the VOC contamination, and, as necessary, development and implementation of additional remedial measures, to ensure that the groundwater is restored to a 10^{-6} risk level at the site boundary.

In preparing the revised Feasibility Study, EPA incorporated results of exposure assessments presented in the document, "Development of Advisory Levels for Polychlorinated Biphenyls." This document was written by EPA's Office of Health and Environmental Assessment (OHEA) Exposure Assessment Group (EAG) and has been peer reviewed both within and outside the Agency.

The OHEA assessment concludes that a PCB level of 1 to 6 ppm in a commercial or residential area would result in an on-site oncogenic risk (i.e. risk of developing cancer) of 10^{-5}.

On April 2, 1987, EPA published a National PCB Spill Cleanup Policy (40 CFR §761.120 Subpart G) that was based on the exposure and risk analysis presented in the OHEA document. The Spill Policy establishes a 10 ppm clean-up level in residential and commercial areas, when a 10 inch cap of clean soil (defined as <1 ppm PCB) is placed over the residual (i.e., <10 ppm) PCBs. The 1 to 6 ppm soil value for PCBs reflects a 10^{-5} risk. Due to the variances inherent in sampling, analysis, and calculating PCB soil risk levels, there is not a quantifiable difference in the risk afforded by 1, 6, or 10 ppm soil concentrations. Subsequent to issuance of the Spill Policy, the PCB cancer potency factor has been raised from 4.3 to 7.7 mg PCB per kilogram of body weight per day. This change is less than an order of magnitude; thus, the risk level corresponding to 10 ppm is still 10^{-5}. A 10^{-5} risk is considered acceptable by EPA and therefore, EPA has elected to use 10 ppm as the clean-up level. Placing a 10 inch cover over the residual PCBs reduces the overall risk to 10^{-6}. At most areas of the site, the excavation and subsequent soil cover will well exceed 10 inches, and, therefore, the risk reduction is expected to be even greater.

The selected remedy is preferred over the others for several reasons. It provides a permanent solution at the site since the source of the problem is removed and future risks from contaminated soil, runoff (e.g. from rains) or PCB vapors are significantly and permanently reduced. In addition this remedy does not require long-term monitoring, land use restrictions, or enforcement of institutional controls to prevent exposure at the site. It allows unrestricted future use of the property which, based on community input, is important for future City plans. The only other alternative that offers this same level of long-term protection at the site is incineration, which has met opposition from the Cloverdale community. Disposal at a facility regulated under federal or state law would ensure that the PCBs are handled in a safe and effective manner. In addition, off-site disposal is the easiest alternative to implement in two stages, allowing the community time to plan for the closure or relocation of the casting plant.

The final remedy will include provisions for groundwater monitoring as long as VOCs are present in the groundwater. Monitoring will also be performed to ensure that PCBs have not impacted groundwater during remediation and to verify that the source of TCE contamination has been removed. The period during which monitoring will be required following remediation will be specified by the NCRWQCB.

XI. STATUTORY DETERMINATIONS

1. PROTECTIVENESS

By removing all soil with PCB levels greater than 10 ppm, the present threat and potential for future exposure to contaminated soil, runoff, or PCB vapors is significantly reduced. Under any plausible future use scenario, the excess risk afforded by remaining soils would be, at worst, a 10^{-5} risk. There is a potential for short-term public health impacts related to the excavation and transportation of soil. These activities will increase the risk of exposure to contaminated soil, as well as to volatile and PCB-contaminated particulate emissions. Excavation related exposure can be controlled by proper health and safety procedures, as well as practices such as misting soil with water to suppress airborne particulates. The use of trucks with protective linings, seals, and tarpaulins, and the use of on-site decontamination procedures, will minimize exposure to waste haulers and to the public along route to the disposal facility. There will be a short-term increase in transportation traffic due to trucks traveling to and from the site and noise levels will increase. The impact on the community should be negligible since most residences are to the north of the site and transport will be along Highway 101 to the south. Groundwater will be restored to levels such that the total risk at the site boundary will not exceed 10^{-6}.

This alternative will have minimal short-term environmental impacts during soil excavation. Biota will be displaced by the excavation process. However, these impacts are temporary and can be mitigated. Vegetation regrowth can be enhanced through proper seeding and mulching practices.

Long-term environmental impacts at the site are not anticipated and the site is expected to be fully restored.

2. ATTAINMENT OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Section 121(d)(2) of SARA requires remedial actions to achieve a level of control that is protective of public health and that meets applicable or relevant and appropriate requirements (ARARs). The Federal ARARs for a site could include requirements under any of the Federal environmental laws (e.g., the Clean Air Act, the Clean Water Act, the Safe Drinking Water Act). State ARARs include promulgated requirements under State environmental or facility siting laws that are more stringent than any Federal ARARs and have been identified to EPA by the State in a timely manner.

Applicable requirements are defined as those clean-up standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location or other circumstance at a CERCLA site.

Relevant and appropriate requirements are defined as those clean-up standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site.

Contaminant Specific ARARs

The contaminant-specific ARARs are described below:

1. TSCA PCB Disposal and Treatment Requirements

Regulations promulgated under TSCA state that any non-liquid PCBs at concentrations of 50 ppm or greater in the form of contaminated soil shall be treated in an incinerator or disposed in a chemical waste landfill. 40 CFR §761.60 (a)(4). Once the contaminated soils are excavated, the requirements become applicable to the MGM Brakes site. EPA has also determined that these requirements are relevant and appropriate to alternatives not involving excavation; this determination is based on the similarity of the affected media, the fact that the same hazardous substance is involved, and the fact that these regulations were developed to address a problem sufficiently similar to that faced at the MGM site to justify their adoption. Therefore, these requirements are considered an ARAR for the site. The specific chemical waste landfill requirements involved are found in in 40 CFR §761.75. These requirements are as follows:

Landfill Requirements

- Soils

  The landfill site shall be located in thick, relatively impermeable formations such as large-area clay pans. Where this is not possible, the soil shall have a high clay and silt content with the following parameters:

  1. In-place soil thickness, 4 feet or compacted soil liner thickness of 3 feet;
  2. Permeability (cm/sec), equal to or less than 1×10^{-7};
  3. Percent soil passing No. 200 sieve, >30;
  4. Liquid limit, >30; and
  5. Plasticity index >15.

- Synthetic membrane liners

  Synthetic membrane liners shall be used when, in the judgment of the Regional Administrator, the hydrologic or geologic conditions at the landfill require such a liner in order to provide at least a permeability equivalent to the soils described above. See §761.75 (b)(2) for liner requirements.

- Hydrologic conditions

  The bottom of the landfill shall be at least 50 feet above the historical high ground water table and there shall be no hydraulic connection between the site and standing or flowing surface water.

- Flood protection

  Various surface water diversion structures are required depending upon whether the site is above or below the 100-year floodwater elevation.

- Topography

  Site shall be located in an area of low to moderate relief.

- Monitoring systems

  Ground and surface water quality from the disposal site area will be monitored prior to commencing operations, during and after operations. Parameters will include PCBs, pH, and specific conductance.

Additional specifications in Section 761.75 address issues concerning approval of landfill operators, landfill site approval, and the transfer of property ownership of a landfill site.

Soil requirements are not fully met. Although the site has a silty-clay soil layer with a permeability of 1×10^{-7} cm/sec or less, borings indicate it does not appear to be entirely continuous.

Hydrologic requirements are not met. Groundwater levels fluctuate within contaminated soil; the required 50 feet above the historical groundwater table is not met.

TSCA also provides the EPA with the ability to grant a waiver when one or more of the technical requirements under 40 CFR Section 761.75(b) are not met as long as it can be demonstrated that the landfill will not present an unreasonable risk to health and the environment. 40 CFR §761.75(c)(4). Based on information contained in the Administrative Record, it has been determined that granting a waiver of the requirements contained in 40 CFR §761.75(b)(1), (2), and (3) would not result in an unreasonable risk of injury to human health or the environment for this site. This finding is based on EPA's determination that although the groundwater directly beneath the site is already contaminated with low levels of PCBs, the contaminated aquifer is not usable due to low yields and, because the rate of movement of the PCBs is highly attenuated, impacts to the downgradient aquifer are not anticipated. The requirements of 40 CFR §761.75(b)(1), (2), and (3) are, therefore, waived for all alternatives that would have contaminants on-site.

2. Federal Safe Drinking Water Act

The Federal Safe Drinking Water Act (SDWA) establishes drinking water maximum contaminant level (MCLs) standards for public water systems. The Act and regulations indicate that the standards apply only to public water supply systems at the tap. However, under SARA, MCLs may be considered relevant and appropriate for contaminated groundwater which may result in a potential exposure via drinking water.

3. Water Quality Control Plan for the North Coastal Basin

The Water Quality Control Plan, adopted on April 17, 1975, pursuant to the Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) and 40 CFR §131.202, establishes water quality objectives for the waters of the state in order to attain the highest water quality which is reasonable considering all demands being made and to be made on those waters and the beneficial uses involved. These objectives have been identified as ARARs for the drainage ditch leading from the MGM Brakes site.

Location-Specific ARARs

Physical characteristics of the site may influence the type and location of remedial responses considered for PCB decontamination. Federal laws on regulations may require mitigation measures or may impose constraints on the location of remedial measures.

Location-specific ARARs relate to fish and wildlife, wetlands, floodplains, and work in navigable waters. There were no location-specific ARARs identified for the MGM Brakes site

Action-Specific ARARs

The action-specific ARARs for the MGM Brakes site deal with requirements for the treatment, storage, or disposal of contaminated soil.

1. RCRA and Hazardous Solid Waste Amendment (HSWA) Standards

Remedial activities that involve the excavation or removal of hazardous substances, on-site management of these substances, or removal to off-site facilities must be in compliance with standards under RCRA and amendments to RCRA enacted through the HSWA standards, and with the requirements of the State standards authorized under RCRA. The requirements are applicable to any soil found to be contaminated with VOC and any soil found contaminated with VOCs will be disposed of in accordance with RCRA. Because PCBs are not regulated by RCRA, the requirements are not applicable, but relevant and appropriate to PCB contamination.

The following RCRA sections are applicable or relevant and appropriate to remedial alternatives for the MGM Brakes site.

- Identification and Listing of Hazardous Wastes (40 CFR §261).

- Interim Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities (40 CFR §265), in particular:

  Subpart B - General Facility Standard
  Subpart F - Ground Water Monitoring
  Subpart G - Closure and Postclosure
  Subpart J - Tanks
  Subpart L - Waste Piles
  Subpart N - Landfills

- Interim Standards for Owners and Operators of New Hazardous Waste Land Disposal Facilities (40 CFR §267)

  HSWA prohibits the continued land disposal of hazardous wastes beyond certain specified dates, unless they meet certain treatment standards or contaminant levels. Standards were established to set levels or methods of treatment to substantially diminish the toxicity of the waste or restrict its migration so that short-term and long-term threats to human health or the environment are minimized. Wastes that meet treatment standards are not subject to land disposal prohibitions. CERCLA-generated wastes have a 48-month statutory exemption from the November 8, 1984, enactment of HSWA. To date, existing HSWA standards regarding PCBs only apply to liquid PCBs or PCBs mixed with a RCRA hazardous waste. Therefore, the RCRA Land Disposal restrictions are not ARARs for the PCB contaminated soil.

  Should any soils be found to be contaminated with TCE, a variance from the Land Disposal Restrictions for this unique site would be sought.

2. USDOT and DOHS Hazardous Material Transportation Rules

Offsite transportation of hazardous materials will be governed by the Federal Department of Transportation (USDOT) and State Department of Transportation (DOT) regulations. These requirements are incorporated by reference into RCRA regulations and the California Code of Regulations (CCR; formerly California

Administrative Code), Chapter 30, Minimum Standards for Management of Hazardous and Extremely Hazardous Wastes. The requirements are applicable to the MGM Brakes site, and thus are identified as ARARs for the site.

A permit would be needed to generate or transport hazardous solids, liquids, or sludges. The MGM Brakes site is technically considered a "generator" because it is the source of hazardous waste or materials that may be transported off-site for disposal. Therefore, these requirements would be applicable. Generator requirements are found in 49 CFR §172 and §177, 40 CFR §263, and CCR Chapter 30, Articles 4 and 5.

DOHS administers RCRA and USDOT regulations. Waste transported out of the State must be handled by a licensed hauler/transporter, who will need a DOHS permit for in-state movements and Federal or State permits for out-of-state transport to secure landfills or incineration depots. The hauler/transporter must operate in compliance with State and Federal regulations on driver training; waste identification; container marking, labeling, and placarding; and transport papers. Packing and shipping must be performed in accordance with 40 CFR §262.3 and 49 CFR §173.

3. Occupational Safety and Health Administration (OSHA) Regulations

All OSHA requirements are applicable to workers implementing the remedial alternatives. Of particular concern will be exposures to particulates and volatiles in the air, as well as direct contact with contaminated materials and hazardous chemicals used in treatment processes. The requirements are applicable to the MGM Brakes site, and thus are identified as ARARs for the site.

SARA requires that the Secretary of Labor promulgate standards for the health and safety protection of employees engaged in hazardous waste operations pursuant to Section 6 of the Occupational Safety and Health Act of 1970.

Final regulations under this section shall take effect one year after they are promulgated. Until then, hazardous waste operations are governed by the interim regulations published in 1986 that provided no less protection for workers employed by contractors and emergency response workers than the protection contained in the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (NIOSH 1985) and existing standards under the Occupational Safety and Health Act of 1970, found in subpart C of 29 CFR §1926.

4. California Code of Regulations Chapter 30

Chapter 30 establishes requirements for "minimum standards for management of hazardous and extremely hazardous wastes." Article 10 classifies PCBs of concentration between 50 and 5,000 ppm as hazardous and greater than 5,000 ppm as extremely hazardous wastes; such waste may not be handled or disposed without a permit issued by the DOHS. These standards are applicable to the MGM Brakes site, and thus are ARARs for the site.

5. California Code of Regulations Chapter 3

CCR Chapter 3 Subchapter 15 establishes standards for the discharge of waste to land. This subchapter provides standards for construction, monitoring, and closure and post-closure maintenance which are ARARs for the containment of any wastes at the MGM Brakes site, and thus are identified as ARARs for the site.

6. California Water Code Sections 13260, 13370, and 13370.5

Sections 13260, 13370, and 13370.5 of the California Porter-Cologne Water Quality Act have been identified as action-specific ARARs for the site. The requirements of these sections apply to any discharges to waters of the State or to a publicly owned treatment work (POTW).

NON-PROMULGATED REQUIREMENTS

The following is a description of "To Be Considered" criteria (TBCs). If no ARAR covers a particular situation, or an ARAR is not sufficient to protect human health nor environment, then non-promulgated standards, criteria, guidance and advisories may be used to provide a protective remedy. These "to be considered" criteria are referred to as TBCs.

1. PCB Clean-up Policy

A TSCA policy for the clean up of PCBs was established by EPA on April 2, 1987. This TSCA Spill Policy establishes the measures which EPA considers to be adequate for the majority of situations where PCB contamination occurs during activities regulated under TSCA. The policy established requirements for decontaminating spills in both restricted and non-restricted access areas. Region IX EPA has determined that the clean-up levels established in the policy (based on a 1986 publication by EPA's Office of Health and Environmental Assessment, OHEA) are necessary to provide an adequate level of protection of human health and the environment for the site.

This determination is supported by the fact that in June, 1987, EPA's Office of Emergency Remedial Response issued a national policy that set levels of PCB in soil considered permissible for the protection of public health affected by contaminated sites regulated under CERCLA. This policy was also based on the 1986 OHEA document. The policy states that it is intended to alleviate the burden on regulators of the cumbersome process of determining permissible levels of PCBs for each site under their jurisdiction.

EPA has determined that the exposure assumptions used in developing the OHEA risk assessment and subsequently the Spill Policy are appropriate to the conditions at the MGM Brakes site. The Spill Policy establishes different clean-up levels for areas with different uses and consequently different exposure pathways. For the MGM Brakes site, the 10 ppm level designed to be protective for residential/unrestricted access is most appropriate, because three residents live extremely close to the site at present and, based on discussions with the City Council, the most likely future use of the site is an unrestircted access residential area. 10 ppm represents a 10^{-5} on-site oncogenic risk, which is considered by EPA to be an acceptable level of risk.

2. California Department of Health Services (DOHS)

DOHS has established PCB Spills Cleanup Policy Number 81-2a. This policy identifies the waste disposal and clean-up requirements for PCB contaminated liquids, solids, and debris of varying concentrations (i.e., >500 ppm, and <500 ppm and >50 ppm). Policy Number 81-2a cannot be considered an ARAR because it is not promulgated, but has been identified as a TBC because EPA has determined that this policy is necessary to protect human health and the environment at the site.

This policy contains provisions for the disposal of non-TSCA regulated soils, rags, and debris containing PCB waste of less than 50 ppm are provided. The policy indicates that such waste is not normally considered hazardous and may be disposed of at a Class II, Class II-1, or Class II-2 disposal site with approval from the RWQCB. Landfills in California are regulated by the RWQCB. Specific landfills in California are designated for disposal of PCB-contaminated soil containing less than 50 ppm PCBs. Approval from the RWQCB must be received prior to disposal.

COST EFFECTIVENESS

Cost estimates presented in the Feasibility Study were prepared in accordance with the remedial action costing procedure manual. Costs for remediating Parcel 1 and Parcel 2 separately or jointly were compared. In estimating costs for remediating Parcel 1 and Parcel 2 separately it was assumed remediation of Parcel 2 would not occur for another ten years. This ten-year delay in remediation is an option provided so that the community can negotiate reconstruction of the MGM facility at the existing or new site, or allow time to otherwise compensate for the potential business loss.

All alternatives, except for the RCRA cap, result in the same order of magnitude for capital and present worth costs. Since costs were comparable for all alternatives, selection of the preferred alternative - offsite disposal - was based on how well each alternative met the other evaluation criteria, (i.e., protection of human health and the environment, ability to meet ARARs, reduction of toxicity, mobility, and volume, short- and long-term effectiveness, and state/community acceptance). Based on the evaluation of all remedial alternatives provided in the FS, EPA believes that the off-site disposal remedy provides overall effectiveness commensurate to its costs such that it represents a reasonable value for the money.

PREFERENCE FOR TREATMENT AS A PRINCIPAL REMEDY

The selected remedy does not meet the statutory preference for alternatives involving permanent treatment as a principal element. Such treatment was found to be impracticable for the following reasons: (1) community opposition to incineration; (2) preference of the community for unrestricted future use; (3) the fact that the fixation alternatives do not use treatment as a principle element to reduce the significant health risks at the site through a reduction in toxicity, mobility, or volume (i.e., while they reduce mobility through treatment, this reduction does not address a signficant exposure pathway - e.g., the inhalation of PCB vapors, ingestion, and direct contact.); and (4) the lack of developed institutions for continual maintenance/oversight of on-site remedies, and the investigatory and enforcement burden entailed in the need to engage in such oversight indefinitely.

USE OF PERMANENT SOLUTIONS, ALTERNATIVE TREATMENT, OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM PRACTICABLE.

Of the alternatives evaluated in the FS, off-site disposal represents the best balance of the nine evaluation criteria designed to reflect the statutory requirements of SARA. Treatment alternatives considered in the FS were chemical dechlorination, incineration, and fixation.

Chemical dechlorination was unsuccessful in reducing PCB levels to an acceptable level due to the nature of the soils at the site. Incineration, although effective in significantly reducing the overall toxicity, mobility, and volume of the contaminants by destroying the PCBs, was vigorously opposed by the community during and after public comment on the first FS. In addition, an incineration alternative would be difficult to implement due to the limited number of available incinerators, the community's broad-based opposition, and the administrative burden involved in meeting federal and state permit requirements. Fixation combined with a cap would be effective in reducing the mobility of the PCBs; however, in order to ensure the long-term protection of human health and the environment, fixation would have to be accompanied by a cap, institutional controls such as deed and land use restrictions, and long-term air and groundwater monitoring requirements. These requirements would represent a continued investigatory and enforcement burden for the indefinite future. EPA also does not have well-developed administrative capabilities to oversee and enforce institutional controls. In addition, community members, including members of the City Council, have indicated that a likely future use of the site is residential; such use would be incompatible with the land use restrictions necessary if fixation were selected as the remedy. Fixation would also be more difficult to implement than off-site disposal because of the limited number of qualified firms and equipment.

In contrast, the alternative involving excavation of all soils above 10 ppm PCBs and off-site disposal significantly reduces any present risks of exposure to the contaminants. The health risks associated with exposure at the site in the future are also significantly reduced without the need for on-site land use restrictions or long-term monitoring. Members of the community have expressed support for the off-site disposal alternative. Although the PCB-contaminated soil will not be treated, it will be transported to a facility especially designed and constructed for the disposal of hazardous waste. These facilities are highly regulated by the federal and state governments such that long-term monitoring and deed restrictions are sure to be enforced and any failure of the landfill detected quickly. The disposal facilities are suited technologically and institutionally to mitigate any potential hazard posed by the contaminated soil.

MGM BRAKES SUPERFUND SITE
CLOVERDALE, CALIFORNIA

ADMINISTRATIVE RECORD INDEX
(not included.)

MGM BRAKES SITE
RESPONSIVENESS SUMMARY
SUMMARY OF MAJOR COMMENTS AND RESPONSES

INTRODUCTION

From May 26, 1988 through June 1, 1988, the U.S. Environmental Protection Agency (EPA) held a public comment period on EPA's Draft Feasibility Study (FS; EPA, 1988a) for the MGM Brakes site in Cloverdale, California. The purpose of the public comment period was to give interested parties the opportunity to comment on the Draft FS. EPA held a community meeting on May 18, 1988, also for the purpose of soliciting public comments on the Draft FS.

The FS addressed possible solutions to the polychlorinated biphenyl (PCB) contaminated soil and VOC contaminated groundwater problems at the MGM Brakes Superfund site. Using the FS and public comments received on this document, the Agency has selected a clean-up remedy for the site, as discussed in the Record of Decision (ROD).

EPA Superfund policy requires a responsiveness summary to provide EPA and the interested public with a review and summary of community concerns about the site and significant public comments on the FS. In addition to summarizing public concerns and questions, the responsiveness summary presents EPA's responses to those concerns.

EPA has categorized the comments and responses to those comments as follows:

I. Comments made by members of the interested public;

II. Comments made by State and local agencies; and

III. Comments made by potentially responsible parties (PRPs).

Potentially responsible parties under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) include current and past facility owners or operators, persons who generated hazardous substances, and persons who transported, treated, or disposed of hazardous substances at the site.

Each of these comment response categories are presented in the following sections.

I. COMMENTS BY MEMBERS OF THE INTERESTED PUBLIC

I.A Letter from Mr. & Mrs. Dee Reynolds
Cloverdale, California to U.S. EPA Region IX

1. Comment: The Reynolds live adjacent to the MGM property. They are concerned about dust production during remediation.

1. Response: EPA is also concerned about dust production. EPA will not allow unabated dust production during soil excavation. EPA will enforce dust control measures such as misting soil and not allow excavation on days with high wind speeds. EPA will also enforce air monitoring during remediation to ensure that off-site impacts are minimized. Excavation will cease if dust exceeds unacceptable levels. In EPA's judgment, these measures are adequate to ensure protection of human health and the environment during excavation.

2. Comment: The Reynolds request that the clean-up of both parcels occur at the same time. Their statement is based on a newspaper article that stated it would be less expensive to perform one clean-up than it would be to do the clean-up in two stages.

2. Response: Remediating the site in one step would allow the problem to be resolved in the shortest time possible. However, remediation of the casting plant building in the short term could result in loss of jobs and a business for Cloverdale. To allow the community and MGM Brakes time to plan for the remediation of the building, EPA is allowing a two-phase remediation for the site.

   The cost of cleaning up in two phases is in fact less than the cost of implementing the cleanup jointly for the off-site disposal alternative. (Draft FS at 5-55.)

I.B Comments Made at Community Meeting, Cloverdale, May 18, 1988

Question and Answer Period

1. Comment: Will the project (i.e., site remediation) bring jobs to the community, or will it be performed by contractors from elsewhere?

1. Response: Any qualified bidder in Cloverdale, Healdsburg, or elsewhere may be allowed to bid on the project. If EPA were to contract the remediation, EPA would have to follow Federal Aquisition Regulations and select the lowest-priced, qualified bidder. If MGM Brakes were to perform the remediation, MGM Brakes could select the bidder based on lowest price or other criteria.

2. Comment: At present, is all of the contamination on the MGM Brakes property, or is some contamination on property to the south?

2. Response: Soil samples collected in the field south of the MGM Brakes property did not show detectable levels of PCBs. The drainage ditch

which flows south from the MGM Brakes site along Highway 101 has shown low levels of PCB contamination, but these levels are all below the 10 ppm clean-up level that is protective of human health.

3. Comment: Is PCB carried in water so that it can be transported across property south of MGM Brakes?

3. Response: PCBs are relatively insoluble but are transported in water adsorbed in suspended sediment. EPA has tested sediment for PCBs in the drainage ditch which flows south from the MGM plant. None were found in EPA's samples. PCBs have been detected in drainage sediments adjacent to the site, but all results show PCBs to be below the 10 ppm clean-up level.

4. Comment: Based on EPA's testing of soils from properties adjacent to MGM Brakes, are there any PCBs present on property other than the MGM Brakes site?

4. Response: See Responses 2 and 3. Low levels have been detected off-site in the drainage ditch flowing south from the site. No other PCBs have been found off-site. During the remedial action, samples will be taken along the site perimeter to further verify that no off-site contamination has occurred.

5. Comment: What is going to be done to protect the community from dust created during earth removal?

5. Response: Dust production during remediation is a factor that EPA is very concerned about and specific dust control measures will be implemented during soil excavation. Soils will be kept wet (misted) during remediation to control dust. In addition, with the high groundwater conditions at the site, a portion of the excavation will be performed in soils already saturated with water; this will help minimize dust production.

6. Comment: How will it be determined whether any PCBs exist in the air during excavation?

6. Response: Atmospheric monitoring for PCB levels will be a requirement of the remedial action.

7. Comment: Will someone from the government be at the site during excavation?

7. Response: A representative of the EPA will periodically observe remediation at the site. The frequency of oversight will be sufficient to ensure that dust levels do not exceed acceptable levels and that the remedy is being implemented properly. Dust levels will be recorded continuously and the firm conducting the work can be fined if, during inspections, it is found that safe levels have been exceeded. The fines provide a strong incentive for companies to comply with EPA's strict guidelines.

8. Comment: What will be done if PCBs are detected in the air during remediation?

8. Response: If PCBs were detected above acceptable levels, EPA would stop work and evaluate the situation so that additional control measures could be implemented to solve the problem.

9. Comment: Where is the soil going to be placed after it is removed from MGM Brakes? Has the decision as to where it is going been made or will it be made at a later time?

9. Response: As a PCB waste, the contaminated soil must be taken to a facility that is permitted to accept the waste. EPA has identified several facilities where the soil can be taken. The decision on where the soil will be taken will be made prior to excavation and will be based on capacity of disposal facilities, transportation costs, and other factors.

10. Comment: A community member thanked EPA for coming around to "our way of thinking" and not burning the PCBs. He hoped that EPA could work out a solution with MGM Brakes. He stated that at least two members of the Cloverdale City Council had already indicated that they would approve of digging up the soil and hauling it away. He concluded with the observation that the problem should be solved as quickly as possible.

10. Response: EPA notes the community support for off-site disposal demonstrated by this comment. EPA agrees that expeditious implementation of the remedial action is important.

11. Comment: With regards to the TCE problem, were all of the samples reported collected independently by EPA?

11. Response: The schematic provided in the fact sheet shows results of samples taken independently by EPA and PRP consultants. The two different values shown for each well are EPA's and the private consultants' results.

12. Comment: How deep were the wells used to sample groundwater for TCE contamination?

12. Response: The wells are installed to a depth of 20 to 30 feet.

13. Comment: Was TCE contamination detected in some of the deeper wells?

13. Response: All of the wells in which TCE was detected are installed above bedrock, which is 10 to 30 feet below the ground surface. All of the wells are installed in the same aquifer so that if contamination is found, it is all in the same aquifer.

14. Comment: Should TCE contamination be anticipated to occur deeper than currently detected?

14. Response: There is no reason to expect that TCE has gone deeper than bedrock for the site.

15. Comment: Was sampling of surface water performed downgradient of the site and, if so, were PCBs detected?

15. Response: EPA collected four sediment samples and one surface water sample downgradient of the site. PCBs were not detected in any of the samples. The PRPs are required to sample surface water on a quarterly basis. PRP sampling performed during the winter of 1987-88 detected low levels of PCBs in surface water. These results are available from the Regional Water Quality Control Board (RWQCB).

16. Comment: Is there a potential health risk to employees currently working at MGM Brakes and what risk is there that someone who contracts a disease would take legal action against the parties involved?

16. Response: The investigation of the PCB problem has primarily focused on contamination outside of the building, and recently, on concrete and soil below the building. EPA is aware that the interior of the building has been cleaned and, as of June 11, 1987, levels were below the OSHA eight hour permissible exposure limit (PEL) of 1 mg/m^3. The remedial action has been developed so that the PCBs in the concrete and soil below the building will be addressed as part of the overall remedial action. EPA cannot give legal advice regarding any potential claims by employees or others.

17. Comment: Have the processes that created the PCB and TCE problem ceased?

17. Response: PCBs are no longer being manufactured in the U.S., and MGM Brakes no longer uses hydraulic fluids containing PCBs. The source of the TCE is not known. EPA has sampled soils for TCE and has not detected it. MGM Brakes has stated that TCE is not used within the casting plant.

18. Comment: Is TCE a component or derivative of PCB, that is, a break down product of PCB?

18. Response: TCE is a cleaning solvent and is not a derivative or component of PCB.

19. Comment: Are there any health risks posed to personnel currently working at MGM Brakes?

19. Response: MGM Brakes has cleaned the building and tested the air inside the building for PCBs. As of June 11, 1987, MGM Brakes results met OSHA standards for PCB exposure. See Response 16.

20. Comments: Commentor concluded by encouraging EPA to "go ahead and proceed, and get rid of it all at one point if at all possible."

20. Response: Comment noted as presented.

21. Comments: Does EPA's proposal mean that the building will be torn down, either now or in ten years, and that the workers eventually will be disturbed?

21. Response: Comments made during previous meetings indicated a concern that site remediation could cause MGM Brakes to close down the casting facility, which would result in a loss of jobs. EPA shares the community's concerns and has developed a plan which includes the possibility of staging remediation over a 10-year period. If the private responsible parties perform the cleanup, they may do the work all at once or split it into two stages, with a maximum of ten years for Phase 2 to occur. If EPA performs the remediation, the two phase approach will be taken. This will allow time for MGM Brakes to plan for remediation of the concrete and soils below the building in a manner least disruptive to workers. EPA feels that ten years is a reasonable period of time over which clean-up could occur. The remediation of the concrete and soils does not mean that the building cannot be replaced. EPA is aware that Thyssen-Bornemiazsa Group, Inc. (TBG) (the owner of the land which comprises the MGM Brakes site) has entered into an indemnification agreement with MGM Brakes regarding costs related to remediation. The financial status of this company leads EPA to believe that it is well able to pay for replacing the building.

22. Comment: A property owner with a well 120 feet deep questioned whether the well was safe for drinking water purposes. The speaker queried whether the water should be sampled and how frequently and by whom.

22. Response: The necessity of sampling the well would depend on its location relative to the site, the reasons to believe it to be contaminated, and whether the well is used. The constituents to be sampled and the frequency of sampling would be based on the answers to the above questions and previous sampling results. The well could be sampled by EPA as part of its program or by MGM Brakes as a part of their program. (Note: a representative of TBG, Inc. offered to have the well sampled.)

Formal Comment Period

23. Comment: Sue Warner of the North Coast Regional Water Quality Control Board (NCRWQCB) noted that the NCRWCQB would be providing comments in writing (See Section II.B). The NCRWQCB will review the FS results with regards to TCE findings on how TCE could affect PCB results in groundwater. The NCRWQCB will also look at beneficial uses of the Russian River and its tributaries from storm water transport of PCBs. Sue Warner noted that the NCRWQCB's discharge requirements and basin plan were not mentioned in the FS.

23. Response: See response to NCRWQCB letter in Section II.B.

24. Comment: A question was raised on when the NCRWQCB was made aware of the TCE problem.

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24. Response: The TCE problem is relatively new (as compared to the PCB contamination) and the NCRWQCB is working with the EPA on identifying the source and solution to the problem. The NCRWQCB has been aware of the TCE problem since October of 1986 and receives monthly monitoring reports from PRP consultants.

II. COMMENTS BY STATE AND LOCAL AGENCIES

II.A CALIFORNIA DEPARTMENT OF WATER RESOURCES MEMORANDUM FROM JAMES U. McDANIEL, CHIEF, CENTRAL DISTRICT

1. Comment: The Department of Water Resources (DWR) states that Cloverdale relies on groundwater to supply drinking water and that it is likely that urban expansion in the area will cause demand for groundwater and further encroach on the MGM site. DWR states that the remedial action chosen should account for the future growth of Cloverdale and all exposure pathways for PCBs, TCE, and any other contaminants released from the site now and in the foreseeable future.

1. Response: EPA shares DWR's concerns about urban growth near the site; this is one of the reasons why EPA selected excavation and offsite disposal as its preferred alternative. Only incineration or offsite disposal allows growth near the site to continue unrestricted by the substances at the site. EPA also shares DWR's concern over future groundwater use and local populace exposure through direct contact, ingestion, or inhalation of site contaminants. Removal of contaminated soils will address the PCB problem and potentially the TCE source. The remedial action will include installation of monitoring wells upgradient and downgradient of the site to assess the effectiveness of the remedial action. Monitoring will continue until the extent of TCE contamination is known and then until TCE is no longer detected. EPA has recently been informed that benzene has been detected near the site and this too will be monitored.

2. Comment: Vadose zone monitoring and groundwater quality monitoring around the site should continue for an indefinite period of time, regardless of when clean-up activities cease.

2. Response: See Exhibit A, Record of Communication between Johanna Miller and Carl Hauge.

3. Comment: DWR states that some mechanism, such as deed restrictions on all contaminated and adjacent properties, should be used to notify potential buyers of the site history and potential problems.

3. Response: If a remedial alternative were selected that would leave PCBs greater than 10 ppm on site, deed restrictions would be required. EPA's identification of off-site disposal as the preferred alternative eliminates the need for long-term deed restrictions on the property. Because PCBs less than 10 ppm will be left at the site, the city and state may opt to place restrictions on the property, including notification to buyers of past land use history. However, deed restrictions would have to be enforced at the local and state levels. EPA does not view such restrictions as necesary to protect human health and the environment, based on its judgement that clean-up to 10 ppm will provide adequate protection. See Response to TBG's Comments 30 and 32, Section III.A.

II.B CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD NORTH COAST REGION
DENNIS L. SALISBURY, ASSOCIATE WATER RESOURCE CONTROL ENGINEER
LETTER TO GLENN STOBER, STATE CLEARINGHOUSE
JUNE 7, 1988 AND JUNE 27, 1988 FOLLOW-UP LETTER

1. Comment: Section 1.6 of the FS fails to include or discuss California Regional Water Quality Control Board ARARs regarding: (1) regulatory authority for waste treatment, storage, and disposal as authorized by the California Water Code; and (2) stipulated control actions set forth in the Water Quality Control Plan for the North Coastal Basin adopted by the State Water Resources Control Board on April 17, 1975.

1. Response: EPA recognizes both (1) and (2) as ARARs pertaining to the discharge of treated "dewatering" water, and continued surface water runoff from the site. Any wastewater discharaged on or immediately adjacent to the site will meet the substantive requirements of these ARARs. 42 U.S.C.§9621(e). Any discharge to a POTW would meet all procedural and substantive requirements.

2. Comment: Statements in the FS in Section 2.2 with regards to a low potential for cosolvent transport are no longer valid because of the presence of chlorinated solvents in wells immediately downgradient of the site.

2. Response: Facilitated PCB transport occurred in the past, due to the release of ethylene glycol, which, when mixed with water, allowed PCBs to move vertically and horizontally in soils at the site at an accelerated rate. Although EPA shares the NCRWQCB's concern over future facilitated PCB transport, the possibility of this occurring under existing conditions is remote. Discharges of ethylene glycol no longer occur. All available data show TCE not to be in contact with PCB contaminated soils. In addition, levels of TCE in the groundwater (-150 µg/L) reflect a 0.000015 percent by volume value. TCE would have to be in the range of 10 percent in order for facilitated transport to occur (TBG, Inc. Comments on EPA FS, Appendix A, 1986). EPA's preferred alternative of excavation and off-site disposal of PCBs addresses the NCRWQCB's concern. Through removal of most of the source, significant cosolvent transport is no longer a possibility. If an alternative were selected which left PCB's above 10 ppm on-site, the use of solvents at the site in the future would have to be restricted.

3. Comment: Solvent facilitated transport of PCBs relative to fixation is not addressed in the FS.

3. Response: EPA's response to the previous comment also applies to this comment. An alternative utilizing a fixed monolith would result in the possibility, although remote, of facilitated transport due to a release of a solvent above or into the fixed monolith. Again, EPA's preferred alternative eliminates the potential for this to occur.

4. Comment: Solvent facilitated transport has not been addressed for the Resource Conservation and Recovery Act (RCRA) cap alternative.

4. Response: EPA's responses to DWR's comments 2 and 3 also apply to this comment.

5. Comment: The Draft FS states that EPA is not required to obtain permits under Superfund, and is only required to comply with substantive criteria of the permits. However, because EPA's preferred alternative involves off-site activities for contaminated soil and treated groundwater, EPA will be required to obtain permits, and meet local agency pretreatment criteria for any discharge to a POTW.

5. Response: EPA agrees that permits are required for those activities that occur off-site, in particular for any discharge of treated water to a POTW and off-site transport of contaminated soil.

6. Comment: The discussion in the Draft FS regarding the low likelihood of transport of PCBs in surface water and sediment fails to recognize the bioaccumulative properties of PCBs. The Regional Board Basin Plan states that all waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. The discussion fails to recognize EPA's definition of "navigable waters" and the California Water Code's definition of "Waters of the State" which are both applicable to the drainage ditches. Tadpoles were noted in a ponded area of the drainage, indicating the drainage supports aquatic life. Finally, the Draft FS provides little substantive information addressing surface water runoff control to be implemented during remedial action.

6. Response: In presenting statements in the Draft FS regarding surface water runoff and contaminated sediment, EPA did not intend to belittle or ignore surface water as a route of exposure. EPA also did not intend to ignore the potential effects on the environment due to surface water releases. EPA is concerned about the continued releases of PCBs into surface waters draining from the site, and these continued releases support the need to remediate the problem at the site. Accordingly, EPA agrees that the Water Quality Control Plan adopted on April 17, 1975 pursuant to 40 CFR §131.202 is an ARAR for the site. As such, contaminated sediments in the drainage ditch leading off-site will be cleaned up to a level that meets the water quality objectives established to protect the beneficial uses. Taking into account the bioaccumulative properties of PCBs, a level will be established that meets the toxicity objective for inland surface waters, enclosed bays, and estuaries quoted by the RWQCB.

During implementaton of the remedial action, EPA will not allow discharges of untreated ground or surface waters into the drainage ditch south of the site. Surface water runoff will be impounded at the southeastern border of the site and pumped into the wastewater treatment unit. Surface water collected in the excavation area will also be treated. Off-site drainage water will be analyzed for PCBs during remedial activities to ensure that PCBs are not being released.

7. Comment: Section 5.2.2 of the FS states that long-term monitoring will not be required under this alternative because the source would be removed to meet the 10 ppm cleanup guidelines. The NCRWQCB states that at a minimum long-term monitoring is necessary to protect groundwater. The provisions for futher groundwater investigation and evaluation of cleanup alternatives included in EPA's fact sheet are not included in the FS; the NCRWQCB regards long-term monitoring as a necessary element of those provisions. The description of remediation on page 5-57 of the Draft FS is in error when it states that no contaminated soil will be left on site. The remedial action will remove all PCB contaminated soils 10 ppm or greater but will leave some contaminated soils at the site. The NCRWQCB is concerned about the PCBs left at the site following remediation and recommends long-term monitoring and further remediation activities.

In a subsequent phone conversation between the NCRWQCB and EPA, the NCRWQCB stated that their primary concern about PCBs left on site is the possibility that these would be mobilized by the solvents in the groundwater. (Telephone conversation between Johanna Miller and Dennis Salisbury, July 14, 1988, see Exhibit B).

7. Response: The FS did discuss the activities to be performed with respect to potential groundwater contamination caused by TCE and its breakdown products (see Response 8, below). Monitoring of groundwater will be a part of the overall remedy until EPA is assured that groundwater meets appropriate standards, after which time, monitoring will no longer be necessary. EPA agrees that p. 5-57 of the Draft FS is incorrect in saying no contaminated soil will be left on-site. More accurately, only soils below 10 ppm will remain on-site. Based on EPA's PCB Spill Cleanup Policy and the OHEA document on which it is based, this level is found to be protective of human health and the environment. (See also, Response Section III.A, Responses to Comments 30 and 32.)

With respect to the NCRWQCB's concern over cosolvent transport of the PCBs remaining after the cleanup (i.e., of PCBs less than 10 ppm), see Response to NCRWQCB's Comment 2. Because TCE has not been detected on-site in contact with PCBs and because the TCE concentrations do not exceed 10 percent by volume, cosolvent transport should not be a problem even if EPA did not plan to address the TCE contamination. Once the TCE levels have reached the appropriate regulatory levels, the remaining 10 ppm of PCBs will not present a threat to groundwater. PCBs present in the soils even at levels exceeding 4,000 ppm do not appear to be posing a significant off-site groundwater threat. The PCBs are relatively immobile in site groundwater, given the clayey nature of the soil, with movement on the order of 2-3 inches per year. The aquifer directly under the site is also not productive. Given these factors, residual PCBs of 10 ppm or less will not pose or create a groundwater problem for the usable groundwater off-site. The remedial action will include groundwater sampling for PCBs during and immediately following the action. Because of the relatively insoluble and immobile nature of PCBs, long term groundwater monitoring of PCBs - as long as they are not detected in the sampling conducted immediately following the action - will not be a requirement of the remedial action. Long term monitoring of TCE will be required until EPA can be assured that the TCE source has been removed and contaminated groundwater does not pose a health threat.

8. Comment: There is no discussion in the Draft FS of measures to be implemented to identify and remove the source of TCE or to treat TCE contaminated groundwater. Remediation of TCE contamination needs to be addressed along with the potential for PCB mobilization of any remaining PCB contaminated soil.

8. Response: On page 1-15 of the Draft FS, EPA presented the proposed program to identify the source of TCE contamination, if such is present on site, and to monitor TCE levels downgradient of the site. In the Draft FS, EPA identified four activities to be implemented as part of the selected remedial action to address the TCE groundwater problem. These activities are as follows:

First, to locate any potential on-site source, soil samples collected to confirm achievement of PCB cleanup levels will also be analyzed for TCE. Samples collected in both parcels will be analyzed for TCE. If a TCE source is detected, it will be removed along with the PCB contaminated soils;

Second, to evaluate how far TCE has migrated, additional downgradient monitoring wells will be installed. The number and location of wells will be dependent on how far TCE has moved;

Third, sampling of monitoring wells will be required on a quarterly basis. If the source is removed during PCB soil excavation - or is no longer present at the site - then concentrations should decrease with time. If concentrations do not decrease with time, then a more detailed investigation may be warranted; and

Fourth, modeling of TCE contamination will be performed to determine rate of movement and potential impacts to downgradient groundwater users. The modeling will be based on existing well data and wells to be installed as part of the TCE tracking effort.

If TCE is detected in site groundwater during remediation, the contaminated water will be treated in the onsite wastewater treatment unit. Because neither the extent of off-site contamination, nor the quantity of groundwater to be treated is known, treatment of off-site contamination is not planned to occur with the PCB remediation. EPA will evaluate the necessity and scope of off-site water treatment of TCE when additional data on the extent of TCE contamination is obtained. EPA's goal is that the groundwater be restored to the appropriate MCL or health-based standard.

TCE is highly mobile in groundwater and levels detected at the site could have resulted from a spill of 4 liters or less of TCE. The source area, if still present, could be an area of soil as small as 4 square feet, making it difficult to find. EPA will work with the

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NCRWQCB in designing the remedy to effectively remediate the TCE problem.

With regards to TCE facilitated movement of PCBs, the zones of TCE contamination and PCB contamination do not coincide; TCE contaminated groundwater is downgradient of the PCB contaminated soil. In additon, TCE levels are too low to mobilize the PCBs. Should any of these conditions change, EPA will re-evaluate the potential for facilitated PCB transport.

9. Comment: The Draft FS does not provide a schedule for implementation of the remedial action. A schedule needs to be developed with specific milestones so that activities occur in a timely and orderly manner.

9. Response: The purpose of the FS is not to provide a schedule for implementation of a particular alternative but to evaluate several alternatives and provide the basis for EPA's selection of the most appropriate remedy for the site. The schedule for implementation will be developed during the Remedial Design (RD). This is the usual procedure followed in CERCLA remedial actions.

10. Comment: In a June 27, 1988 follow-up letter, the NCRWQCB states that with regard to the need for permits for remedial activities, federal law does not preempt local or state laws. The NCRWQCB also states that "therefore,.... appropriate Regional Board regulations of the proposed remedial activities will be applied pursuant to California Water Code Sections 13260, 13370, and 13370.5."

10. Response: The Superfund Amendments and Reauthorization Act (SARA) explicitly exempts response actions conducted on-site from any and all requirements to obtain federal, state, or local permits. 42 U.S.C. §9621(e). Therefore, permits will only be required for off-site activities. The substantive requirements of all ARARs will be met for both on-site and off-site activities. See also, Responses to NCRWQCB, Comments 1 and 5, above.

II.C CALIFORNIA DEPARTMENT OF HEALTH SERVICES, LETTER FROM MICHELLE REMBAUM, NORTH COAST CALIFORNIA SECTION

1. Comment: Comment numbers 1 and 3 of the letter submitted on April 6, 1987, identifying the State ARARs, must be addressed. These comments are as follows:

    1. Pursuant to Section 25356.1(c) of the California Health and Safety Code, the State requires that a Remedial Action Plan (RAP) be prepared for each site. The RAP must specifically address the following six factors: (1) the health and safety risks posed by the site; (2) the effect of contamination on present, future, and probable beneficial uses of the contaminated resources; (3) the effect of the remedial action on the reasonable availability of groundwater resources for present, future, and probable beneficial uses; (4) the site specific characteristics, including the potential for off-site migration of hazardous substances, the surface or subsurface soil, the hydrogeologic conditions and preexisting background contamination levels; (5) the cost-effectiveness of the proposed remedial action measures; and (6) the potential environmental impacts of the alternative remedial action. In order for the Record of Decision (ROD) to be functionally equivalent to the RAP, these six factors must be addressed.

    3. Applied Action Levels (AALs) established by the Department of Health Services should be used in evaluating and selecting remedial actions.

1. Response: The RAP requirements are not an ARAR because they only establish administrative procedures, not substantive requirements. See Interim Guidance on Compliance with ARARs, July 9, 1987; see also, CERCLA, 42 U.S.C §9621(e). Even though the RAP requirement is not an ARAR, EPA's ROD does address the six listed factors.

   Applied Action Levels also cannot be considered ARARs because they are not promulgated. See 42 U.S.C. §9621(d)(2)(c)(iii). The AALs could be used as a "To Be Considered" criteria (TBC) to establish a protective level for those contaminants not having an ARAR or if the ARAR does not establish a protective level. Of the contaminants of concern for this site (PCBs, chlorobenzenes, TCE and its breakdown products, and benzene) only benzene has an AAL (of 0.7 ug/L). However, benzene has an established MCL that is an ARAR that is protective, and therefore, a TBC is not needed to establish a protective level.

2. Comment: The California Environmental Quality Act (CEQA) should be included as an ARAR for the MGM Brakes site.

2. Response: EPA has determined that the requirements of CEQA are no more stringent than the requirements for environmental review under CERCLA, as amended by SARA. Pursuant to the provisions of CERCLA, the NCP and other federal requirements, EPA's prescribed procedures for

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evaluation of environmental impacts, selecting a remedial action with feasible mitigation measures, and providing for public review, are designed to ensure that the proposed action provides for the short-term and long-term protection of the environment and public health and hence perform the same function as and are substantially parallel to the state's requirements under CEQA.

Since EPA has found that CERCLA, the NCP, and other federal requirements are no less stringent than the requirements of CEQA, EPA has determined that CEQA is not an ARAR for this site.

EPA will continue to cooperate with the California Department of Health Services and other State and Federal agencies during the design phase, to clarify further environmental review and mitigation requirements for this project and ensure that they are fulfilled.

III. COMMENTS BY THE POTENTIALLY RESPONSIBLE PARTIES

This section presents responses to all significant comments made by TBG and TBG consultants on the Draft Feasibility Study (FS), MGM Brakes Site, Cloverdale, California (EPA 1988). Their comments have been summarized and paraphrased, as appropriate.

III.A COMMENTS BY TBG

TBG did not number the comments provided to EPA. To facilitate the review of and response to TBG comments, the page number and text line numbers of specific comments are referenced with the comment summary. The response immediately follows the comment.

1. Comment: Page 1, lines 1 through 20 and page 2, lines 1 through 12. This text presents introductory, editorial, and informational matter.

1. Response: The material provides an introduction to the comments that follow. No comment is raised that is not responded to later in this text.

2. Comment: Page 2, lines 13 through 25. TBG's comments (TBG 1986) on the first Draft FS (EPA 1986) with regards to the incineration alternative are incorporated by reference.

2. Response: The comments on the first Draft FS with regard to incineration were addressed in the text of the revised FS. See in particular, Chapter Two "Response to Comments on MGM Brakes Feasibility Study" (EPA, 1988).

3. Comment: Page 3, lines 4 through 15. TBG alleges that the Draft FS was developed without consideration of site-specific information. The Draft FS incorporates EPA's advisory levels for PCB cleanup (EPA, 1986) and does not present a site-specific risk assessment.

3. Response: EPA strongly disagrees with the statement that the Draft FS was developed without consideration of site specific information. Site-specific information was incorporated throughout the FS and was considered in all decisions. EPA's selected remedy considers not only the long-term risk posed by the site, but also the concerns of the local community. Through removal of PCBs >10 ppm, the site can be restored to unrestricted use and long-term monitoring and site administration by local authorities will not be required.

   In revising the Draft FS, EPA incorporated existing scientific and health assessment efforts made by the scientific community and reported in the document "Development of Advisory Levels for Polychlorinated Biphenyls (PCBs) Cleanup" (EPA, 1986b). EPA, therefore, elected not to revise the existing endangerment assessment prepared for the first FS (EPA, 1986a). EPA is puzzled by TBG's comment objecting to the incorporation of advisory level data and clean-up levels into this FS, since TBG itself suggested use of the advisory levels. In TBG's comments on the first Draft FS, TBG stated that "[the Advisory Levels publication] provides a more useful and appropriate basis for establishing 'target cleanup levels' than those referred to in the Draft FS." (TBG Comments, 1986 at p. 31)

The use of the OHEA document is supported by EPA, Region IX's toxicologist (see Exhibit D).

4. Comment: Page 3, lines 10, 11, and 12 and Page 10, lines 12-14. TBG states that EPA's PCB Spill Cleanup Policy and the document on which it is based, "Development of Advisory levels for PCBs" (OHEA, May 1986), are irrelevant to the actual conditions at the site.

4. Response: Based on its best professional judgment, EPA has determined that these documents present "to be considered" (TBC) cleanup standards for the MGM Brakes Superfund Site. EPA considered the similarity of the objectives of this guidance and policy with the primary objective of the remedial action at the site: protection of human health and the environment in the clean-up of a PCB spill. The OHEA document was specifically developed "to provide advisory levels for PCB cleanup." To do this, its authors developed an "exposure and risk assessment methodology related to hazardous waste and spill sites and analysis of health effects data" (at p. vii) (emphasis added). The preamble to the Spill Policy recognized that the cleanup standards contained therein could appropriately be used to set the clean-up level for a CERCLA/SARA site. 52 Fed Reg. 10688, 10690 (April 2, 1987). Also see Response to Comments 8 and 32.

5. Comment: Page 3, lines 13 through 19. TBG disagrees with EPA's conclusion that risks posed by the inhalation and ingestion pathways are unacceptable and argues that the risks associated with these pathways are over-stated and are not based on site-specific data.

5. Response: EPA's conclusion regarding the unacceptability of these risks is based on the facts that: (1) the chemical has been banned from use due to its toxicity and environmental effects; (2) laboratory studies on animals have shown it to be a carcinogen; (3) the presence of PCBs in soil and air on and adjacent to the site; (4) the presence of PCBs in soil at levels exceeding advisory levels established in the OHEA document; and (5) EPA's mandate to protect human health against present and potential future risks. PCBs continue to be released from the site in an uncontrolled manner and that release is deemed unacceptable to EPA and the local community. These unacceptable levels and the continued release have been confirmed by site-specific data.

6. Comment: Page 3, lines 20, 21, and 22. TBG perceives that the surface water route is the "only significant pathway" for migration from the site and alleges EPA ignored this pathway.

6. Response: The surface water route was not ignored. On Page 1-9 of the FS (EPA 1988a), surface water runoff and contaminated sediments are addressed. EPA remains concerned about the continued releases, particularly to the upgradient groundwater wells that are now

contaminated due to surface water drainage into the well enclosures. EPA's proposed remedy addresses this migration route.

EPA disagrees that surface water transport is "significant" when compared to ingestion or inhalation. The PCB levels in drainage sediment remain less than 10 ppm, while on-site soils exceed 4,000 ppm. Soil levels remain too high to be ignored or considered insignificant. Moreover, surface water transport occurs seasonally, while under a likely future use of the site ingestion and inhalation can occur throughout the year.

Nevertheless, EPA is concerned about protecting the beneficial uses of the surface water contained in the drainage ditch. Therefore, a component of the overall remedy for the site will be to cleanup sediments in the drainage ditch to a level which complies with the Water Quality Control Plan for the North Coast Basin. See also Response 6 of Section II.B.

7. Comment: Page 3, lines 22, 23, and 24, and Page 4, lines 1 and 2. TBG states that EPA has misapplied and ignored statuatory requirements in the analysis of remedial alternatives, and that the analysis has "no foundation in fact or legal authority."

7. Response: EPA has appropriately applied the statutory requirements of CERCLA, as amended by SARA. The explicit factual and legal basis for the comparison of the alternatives is contained in the FS and the Record of Decision (ROD).

8. Comment: Page 4, lines 3 through 35, page 5, lines 1 through 19. TBG states that the Draft FS does not include a baseline risk assessment based on site specific data, quotes EPA FS guidance on the scope of a risk assessment, disagrees with EPA's use of risk levels and clean-up goals taken from the "Advisory Document" (EPA, 1986b) and the TSCA PCB Spill Clean-up Policy, and claims that these levels were adopted for the sake of "convenience."

8. Response: PCBs are one of the few chemicals in which the industrial, public health, and regulatory communities have developed a concensus guidance on clean-up levels for spills. PCBs are also one of the few chemicals for which EPA has conducted an in-depth risk assessment to develop risk advisory levels. EPA's reliance on this extensive prior work is not simply a matter of "convenience" but rather represents a technical and legal judgement that this guidance and policy are well-suited to the determination of a clean-up level which would be protective of human health and the environment at this site. In January 1986, EPA developed a national policy entitled, "Recommendation on Removal Action Level for PCBs in Soil Based on Health Effect." Using the exposure and risk assessment developed in the OHEA document, this policy "set forth the advisory limitations of PCB in soil considered permissible in protecting the health of the public affected by contaminated sites regulated under CERCLA." See FS (EPA 1988a), Appendix F, at 1. The policy states that it is intended to alleviate the burden on regulators of the cumbersome process of determining permissible levels of PCBs for each site under their

jurisdiction. The Agency clearly intended the OHEA advisory levels to form the basis for decisions on PCB clean-up, not just for recent spills, but also when appropriate for historic spills regulated under CERCLA. The decision to rely on the OHEA risk assessment is substantiated by EPA, Region IX's toxicologist (see Exhibit D).

In preparing the Draft FS, EPA compared site data with assumptions in the "Advisory Document" and decided that the guidance and policy are pertinent to site conditions. Because the results of the "Advisory Document" are scientifically based and accepted by health authorities, EPA adopted the risk levels contained therein for the MGM Brakes site. See also Response to Comments 4 and 32. EPA's determination in this regard is in compliance with the FS development guidance quoted by TBG. This guidance explicitly recognizes that the level of effort appropriate to performing a risk assessment at a given site depends on many factors, including the concentration and identity of substances, the number of exposure pathways, the availability of appropriate standards and/or toxicity data, and the likelihood that "no action" will be the chosen alternative (if it is likely that the no action alternative will be chosen, a thorough endangerment assessment is necessary). Draft RI/FS Guidance, March 1988, at 3-36 to 3-37. The PCB levels at this site are extremely high, PCBs are extremely persistent in the environment, and several exposure pathways exist. Also, there is an available exposure and risk assessment specifically for PCBs. All of these factors, combined with the fact that three residences are located within 100 feet of the site, made it extremely unlikely that the no action alternative would be choosen. Considering all relevant factors, EPA's Endangerment Assessment (EPA 1986) meets both the terms and spirit of the draft guidance. Moreover, this guidance does not create binding requirements. The March 1988 draft explicitly states that it is "intended for internal agency review only" and should not "be construed to represent agency policy." Id. at ii.

9. Comment: Page 5, lines 19 through 26. TBG asserts that EPA used the "generic" risk levels and Spill Policy because site data indicate a low level of risk "that does not warrant substantial site remediation" and that EPA's failure to recognize the low level of risk, and its selection of the clean-up level, are arbitrary and capricious.

9. Response: In making its decision to remediate the MGM Brakes site, EPA recognized that PCBs continue to be released from the site in air and surface water, and that the high levels (>4,000 ppm) of PCBs remaining in surface soils present an inhalation hazard and a future inhalation, ingestion and dermal absorption hazard. Soil levels in the range of 35-61 ppm represent a 10^{-4} risk of developing cancer from on-site exposures. PCB levels at the site well exceed this range. EPA does not consider risks greater than 10^{-4} to be "low." This level represents an unacceptable public health risk and thus the site warrants remediation.

10. Comment: Page 6, lines 1 through 12. TBG questions EPA's contention that direct soil contact is an "important" exposure pathway, stating that the highest PCB concentration (4,500 ppm) was a "subsurface

sample", and that the average PCB soil concentration at the site is about 200 ppm.

10. Response: Table A-2, labeled "Subsurface Soil Sampling Results," presents results of borings that start at the surface and continue to depths of 5 feet to 29 feet. The sample which produced a value of 4,500 ppm was collected at the 0.5 foot interval of deep boring, thus making the sample a surface sample. Because there are a number of samples collected within the 0-1 foot surface interval that exceed 1,000 ppm, direct soil contact will remain an important exposure pathway for the MGM Brakes site. Even TGB's computed average of 200 ppm well exceeds the level corresponding to a 10^{-5} on-site risk.

11. Comment: Page 6, lines 13 through 24, page 7, lines 1 through 9. TBG questions the conclusion that direct contact with PCB contaminated soil would result in direct exposure, arguing that EPA's reasoning is based on animal data and that "this may not be the case for humans." TBG also states that site evidence does not demonstrate health effects to MGM employees, and human exposure data reported elsewhere do not provide evidence of exposure resulting from direct contact to PCB contaminated soil.

11. Response: EPA has a clearly established policy for classifying chemicals with respect to carcinogenicty. PCBs are classified by EPA as a probable human carcinogen based on evidence that they cause cancerous tumors in animals. EPA must fulfill CERCLA/SARA's statutory mandate to protect human health and the environment. EPA must make use of the best available data in making its decisions. TBG uses the words "may not be the case in humans" when discussing EPA's conclusion that direct contact with PCB contaminated soil would result in direct exposure. PCBs can cause cancer in animals, and the latent effects of exposure to humans may not be known for years to come. Until epidemiological studies definitely show this "not" to be the case, EPA will strongly defend its use of laboratory data. Animal toxicity studies are conducted based primarily on the long standing assumption that effects in humans can be inferred from effects in animals. In fact, this assumption has been shown to be generally correct. Thus, all chemicals that have been demonstrated to be carcinogenic in humans, (including arsenic, which has recently been shown to cause tumors in animals), are carcinogenic in some, although not all, experimental animal species. See also, Responses to TBG's 1986 Comments on pp. 2-1 to 2-4 of the FS (EPA, 1988a).

12. Comment: Page 7, lines 11 through 17. TBG states that EPA's FS concludes that because PCBs have been detected in site air samples, risk at the site results from the following three pathways: dermal absorption, ingestion, and inhalalation. TBG also states that the risks from these three pathways were greatly overstated.

12. Response: EPA does not make this conclusion based on air data, but instead bases its analysis on the fact that these are the three most significant exposure pathways under present and likely future site use conditions. The claim that the risks were overstated is responded to in Responses 5, 13, 14, and 15.

13. Comment: Page 7, lines 18 through 23, page 8, lines 1 through 22. TBG states that EPA ignores the "magnitude" of airborne PCB data and that EPA used this data only as evidence of the presence of "PCB-containing airborne particulates". TBG objects to EPA's rejecting the data due to sampling and analytical difficulties, stating that the "24-hour sampling event may represent reasonable worst-case conditions at the site." TBG criticizes EPA's questioning of the adequacy of the air sampling program because EPA had an opportunity to comment on the sampling plan prior to and during the field effort.

13. Response: The use of the air data in question is not appropriate for purposes of a quantitative endangerment assessment for the following reasons.

EPA did have an opportunity (seven days) to review the sampling plan; however, the objective of using atmospheric data collected by the Kennedy/Jenks/Chilton (K/J/C) study for quantitative risk assessment purposes was not clearly stated in the sampling plan (K/J/C, 1987). That is, nowhere in the plan is it stated that the data would be provided to individuals qualified to perform a risk assessment and that a risk assessment would indeed be performed. The specific objective of atmospheric sampling as stated in K/J/C's plan (page 1) was to "conduct short-term sampling of airborne PCB concentrations, if any, near the on-site area that shows highest concentrations of PCBs in soils and at the boundaries of the site." K/J/C's rationale for air sampling for PCBs was based on statements in the first draft FS (EPA 1986a; Endangerment Assessment) which discussed the potential for exposure to volatilzed PCBs and contaminated dust, but which stated that the potential could not be quantified because a lack of airborne data. The rationale section in K/J/C's sampling plan (page 2) concludes that "[t]his air sampling plan is designed to obtain airborne PCB levels, if any, at the site". Data collected to determine site levels is not necessarily also suitable for use in performing a quantitative risk assessment. Because K/J/C did not explicitly state this objective, EPA could not comment on it during review of the sampling plan. EPA did inform K/J/C at that time that the data would be incorporated into the revised Draft FS, which was done.

When EPA reviewed the sampling plan, EPA's concerns centered on whether the program would be adequate to detect PCBs in samples collected at the site. EPA was not aware of K/J/C's intent to conduct an endangerment assessment until after the sampling episode was completed. Had EPA been made aware of this, EPA would have commented on it at the time that the plan was reviewed. It appears that K/J/C may have made the decision to perform the endangerment assessment after the field study was over. In K/J/C's report on air dispersion modeling (K/J/C, 1988e), K/J/C states "[b]ecause detectable concentrations were found, it was decided to calculate the concentrations of PCBs that might be present in ambient air in the vicinity of the MGM Brakes site" (page 1). K/J/C then goes on to say that the "information will be used in assessing health risks" (page 2).

EPA and CDM did comment on the sampling protocol prior to the field event. EPA verbally discussed with K/J/C concerns over the use of the term "upwind" (indicating background) with regards to meteorological conditions at the site. On page 2 of the Plan, it states that locations A-1 and A-2 would serve as "upwind monitoring stations." EPA and CDM informed K/J/C that the assumption stated in the plan that winds were "typically northerly to northwesterly" (page 2) was wrong because winds would also come from southerly directions over a 24-hour period. Therefore, sampling of "upwind" would not be performed if the program was implemented as stated in the plan and background would not be achieved. Meteorological results presented by Acurex (1987) substantiate EPA's comments on this matter. In fact, the highest airborne PCB level was measured at monitoring Station A-2, an "upwind" location.

While in the field overseeing the sampling program, CDM reviewed the adequacy of and adherence to sampling protocols and commented on these. The adequacy of a 24-hour sampling event on which a risk assessment could be based was not at issue because the use of data for risk assessment purposes was not mentioned.

TBG's statement on line 23, page 7 that the FS claims that PCB presence is due to contaminated particulates is incorrect. Nowhere in the FS does EPA state that airborne PCBs result only from contaminated particulate matter. PCBs detected in air samples result from volatilized PCBs and contaminated particulates. This fact is supported by Dr. Byard in his letter to Ms. Shanks, provided as Appendix A to TBG's comments. As stated on page 1-10 of the FS (EPA, 1988a), an unfortunate shortcoming of the air sampling was that airborne particulates entrained on the high volume filter were not analyzed separately from PCBs captured within the PUF cartridge. Thus, the level of particulates, the concentration of PCBs associated with the particulates, and the volatized PCB fraction are not known.

The assertion that meteorological conditions during the 24-hour event "may indeed represent reasonable worst case conditions at the site" is irrelevant since it is equally true that these conditions may not represent reasonable worst case conditions at the site. TBG failed to demonstrate the range of meteorological conditions that could exist at the site over a 365 day period. Nor did TGB provide a reasonable basis for concluding that the conditions on the day of sampling represent a "reasonable worst case" conditions compared to other days. TBG referred to the day as "hot," while Dr. Byrd described the day as "warm." Although warm weather with little wind could facilitate elevated vapor concentrations, these conditions would not contribute to elevated particulate levels unless airborne particulates were mechanically produced by some outside activity other than wind. A review of data provided by Acurex (1987) shows that the wind blew from the east southeast 25 percent of the time, at an average wind speed of 11 mph. TBG describes wind conditions as "light," whereas K/J/C, TBG's consultant, stated that the winds were "moderate" during the sampling. See K/J/C Comment 1.8 in Section III.C., below. This moderate wind condition would facilitate dispersal of contaminants and thus lower the observed concentration at the point of sampling. Hosein et. al. (1987), in a study of PCB airborne levels during a PCB site remediation, showed that: (1) PCB vapor levels approximated PCB particulate levels; (2) PCB air concentrations increased with increasing temperature; and (3) the atmospheric levels decreased with increasing wind speed. Because wind speeds at the site exceeded 10 mph, it is likely that dispersal of PCBs was occurring and, therefore, the observed results could be lower than would be expected if calm wind conditions existed during sampling. TBG references the Byard report (Appendix A of TBG comments), which on page 3 states that a "warm dry day" represents "reasonable worst case conditions" for the site. Dr. Byard's reasoning was based on the assumption that 100 percent of the PCBs were volatile and he doesn't reference site wind conditions. (TBG's Comments, Appendix A, May 31, 1988 Cover Letter.) The Hosein et. al. 1987 paper does not support these assumptions. EPA's judgement remains that the 24-hour episode cannot be used to represent worst-case or typical conditions for the site. In Exhibit D, EPA's toxicologist further describes why a single 24-hour smpling event is not appropriate for risk estimation of long-term exposures or estimation of worst-case exposures. If a quantitative endangerment assessment of air exposure were to be performed, long-term sampling would be required.

A study such as that implemented by K/J/C can only be considered reconnaisance level, intended to identify whether or not airborne PCBs can be detected. Results of such a study are valuable primarily in defining the scope of a larger scale study, the results of which could be used in a quantitative endangerment assessment. Because of the numerous short-comings of the TBG-K/J/C air study, EPA will only use the resulting data to support the conclusion that the air pathway is an important exposure route. EPA will continue to use the OHEA document to support EPA's risk assessment of the site.

14. Comment: Page 8, lines 23 and 24, page 9, lines 1 through 5. TBG states that EPA's rejection of the air data due to background interference during analytical sample recovery is unfounded. The recovery efficiency standards were reanalyzed with the interference removed and recovery results met quality control (QC) standards.

14. Response: TBG's comment is noted and accepted. However, even if the data passed QC criteria, the data remain acceptable for qualitative purposes only (see Response 13). EPA's copy of the Acurex letter referenced in TBG's footnote #4 is dated December 23, 1987, not December 28, 1987, as stated in TBG's footnote.

15. Comment: Page 9, lines 6 through 19. TBG alleges that EPA has failed to take into account the "small size" of the population potentially exposed to the site, stating that only two residences are near the site. TBG believes that the risk levels are insignificant, especially when compared to background levels. TBG also claims that site PCB air concentrations are less than typical background levels in household and office space air.

15. Response: Three residences (not two, as stated by TBG) border the site. One of the residences is immediately opposite the spot where the highest air concentration was measured. In addition, residential development is occurring just north of the site and the potential for exposure under likely future use is great. EPA rejects TBG's contention that because only a few individuals live near the site the risk compared to background is low. As stated in Response 13, background ("upgradient conditions") for the site was not determined by TBG's sampling program. TBG does not know background concentrations for residences in Cloverdale. The use of data from industrialized regions of Michigan, as referenced by TBG and reported in Health Risk Associates report (January 1988) is inappropriate and irrelevant to an analysis of background risks for Cloverdale.

16. Comment: Page 9, lines 20 through 24; page 10, lines 1 through 5. TBG states that under the assumptions made in the Advisory Document, 10 ppm is calculated to represent $1x10^{-6}$ oncogenic risk.

16. Response: The Advisory document and the FS (page 1-18) do not state that a 10 ppm soil level represents a $1x10^{-6}$ oncogenic risk. Instead a soil level of 1 to 6 ppm represents a 10^{-5} risk. (The range is based on different soil types).

17. Comment: Page 10, lines 6 through 25; page 11, lines 1, 2, and 3. TBG introduces a report, prepared by a Dr. James Byard (included as Appendix A to TBG's comments), which is a review of the revised FS endangerment assessment. TBG makes the following comments, based on Dr. Byard's report:

1. TBG states that the average PCB airborne concentration "under reasonable worst case conditions" was 49 times lower than the airborne concentration assumed in the Advisory Document.

2. TBG states that the Advisory Document soil-dermal uptake calculations are more conservative than the factor EPA now endorses.

3. Child soil ingestion is overstated given that the site is fenced; TBG cites a recent study indicating a lower ingestion rate.

4. Because the Advisory Document cleanup levels are based on a linear multi-stage extrapolation model (used for chemicals that initiate cancer through DNA modification), and because PCBs have not been shown to be genotoxic, the cleanup levels are not appropriate.

17. Response 1: As explained in Response 13, the data was not shown to be representative of "reasonable worst case conditions" for the site. Without knowing more about annual meteorological conditions and ranges for the site, a worst case scenario cannot be developed. An "average" atmospheric PCB concentration cannot be established for the site

because the representativeness of the site with regards to soufce areas and background was not established. Furthermore, the highest PCB concentration was detected less than 100 feet from the nearest residence along the perimeter of the site, not near a "source area." Because all but one of the perimeter stations had detectable PCBs and there was only one station in an area with soil contamination, the data can only be used to demonstrate the presence of airborne PCBs and not average levels for incorporation into a risk document. The data base is too inadequate to be used for any other purpose.

Response 2: The difference between the 2 percent dermal uptake value used in EPA's first FS and the 5 percent used in the Revised FS is insignificant. Using a lower, less conservative 2 percent value does not change the risk estimate. For example, to change the risk from 10^{-3} to 10^{-4}, the absorption factors would need to be ten times higher. The difference between 2 and 5 percent is only 2.5. It is also important to note that the OHEA document assumes that children are only exposured every other day, which is a common toxicological assumption in cold climates where it snows. In an area such as Cloverdale, a more likely assumption would be exposure every day and, therefore, any risk calculations should be multiplied by 2, negating any difference in the dermal absorption factor.

Response 3: CERCLA/SARA's mandate to protect human health places upon EPA the responsibility of estimating risks from current and potential future uses of contaminated sites. Because the area immediately adjacent to the MGM Brakes site is currently slated for residential development, it is reasonable to assume that soil ingestion by children may occur at the site. Additionally, the site itself may be developed, thus increasing the chances that such ingestion will occur. Therefore, an exposure pathway which assumes that children may come into direct contact with, and ingest, PCB contaminated soil is appropriate for the MGM Brakes site. (See Exhibit D)

Even the use of Dr. Byard's suggested ingestion rate does not significantly change the risk estimate for the site. According to the OHEA document, PCB levels between 35 and 61 ppm are associated with a 10^{-4} on-site risk. The 4,500 ppm at the site exceeds this range by two orders of magnitude, which means the ingestion rate would have to be 100 times lower just to bring the risk down to the lower end of acceptable risk. The OHEA document used an ingestion rate for children of 0.3 grams/day, whereas Dr. Byard uses a rate of 0.1 grams/day. Dr. Byard's rate is the same order of magnitude as EPA's, not 100 times lower.

Response 4: EPA's risk assessment for the MGM Brakes site reflects current Agency policy regarding estimation of potential cancer risks from chemicals at Superfund sites. This policy directs the risk assessor to use EPA - approved cancer potency factors from IRIS (Integrated Risk Information Service) when available, or from individual Program offices when IRIS values are not available.

Since there currently is no cancer potency factor for PCBs in IRIS, use of the PCB cancer potency factor derived by EPA's Carcinogen

Assessment Group (CAG), as was done for this assessment, was appropriate. Regardless of Dr. Byard's interpretation of the scientific data on PCB carcinogenesis, EPA policy requires that established cancer potency factors be used; this was done the MGM Brakes site risk assessment.

18. Comment: Page 11, lines 4 through 21. TBG presents an alternative approach to the Advisory Document risk levels, one which was suggested by Dr. Byard. (Dr. Byard assumes that PCBs have an established threshold dose below which no observable effect can be determined [no observable effect level or NOEL]; this assumption is based on liver studies in rats.) Based on Dr. Byard's analysis, TBG asserts that according to Dr. Byard, a 4,500 ppm soil concentration "would result in no statistically or biologically significant increases in frequency or severity of adverse effects in the exposed population." TBG goes on to suggest that "leaving the soil in place under current site conditions would result in no significant increase in risk of adverse health effects to the community". TBG closes its comment with a suggestion that "scaling down" of the remedial response would be "more appropriate for the low magnitude of the risk."

18. Response: Nowhere in Dr. Byard's report does he use the words "statistically or biologically significant increases in frequency or severity of adverse effects observed in the exposed population," as does TBG in its comment. What Dr. Byard does state is that using his calculations, children are exposed to a dose of 13,500 nanograms/kilogram/day (ng/kg/day) through ingestion alone (not counting inhalation of vapors). This dose only provides a safety factor of four, as compared to the No Observed Effect Level (NOEL) of 50,000 ng/kg/day, as calculated by Dr. Byard. As explained in Response to Comment 17, EPA does not consider the use of a NOEL for a carcinogen such as PCBs to be appropriate. Even if EPA accepted Dr. Byard's assumption that PCBs are not genotoxic, it would still be inappropriate to use a NOEL as an estimate for a nontoxic dose. EPA calculates nontoxic doses (referred to as Reference doses) using a safety factor of 100 to 1,000. Dr. Byard alluded to this more appropriate procedure in his report but chose to discount the value of 50 ng/kg/day in his comparisons with the doses he calculated, based on the level of contamination at the site.

19. Comment: Page 12, lines 1 through 29; Page 13, lines 1, 2, and 3. TBG makes editorial and informational statements regarding CERCLA, SARA, and the Draft National Contingency Plan (February 12, 1988).

19. Response: The Draft National Contingency Plan (February 12, 1988) is not a public document and does not represent agency policy. The draft was created for purposes of internal agency review only.

20. Comment: Page 13, lines 12 through 23. TBG quotes the Draft NCP and Draft RI/FS Guidance on the definition of "overall protection of human health and the environment."

20. Response: As explained in Responses 8 and 19, neither the Draft NCP (February 12, 1988) nor the Draft RI/FS Guidance (EPA, 1988c) represent Agency policy.

21. Comment: Page 14, lines 1 through 11. TBG quotes the Draft NCP and then states that "where several remedial alternatives satisfy the primary requirement for protection of human health and the environment, the cost-effective remedy is the one which achieves this goal at the least expense."

21. Response: See Response 19 with regards to the Draft NCP. EPA does not agree with TBG's interpretation that the cost-effective remedy is the least expensive alternative among all those meeting the primary requirement of protection of human health and environment. Human health and environmental protection is just one of many competing factors EPA must consider in evaluating the effectiveness of a particular alternative. In choosing a cost-effective remedy, EPA only considers cost among alternatives of equal effectiveness. See also, Response 44 in this section. Moreover, in evaluating the remedial alternatives, EPA did not conclude that capping, fixation, and off-site disposal equally satisfied the primary requirement for protection of human health and the environment. Both capping and fixation rely on the enforcement of institutional controls to ensure that they remain protective. Fixation would reduce mobility but data provided by K/J/C shows that PCBs in fixed soil are not chemically bound and that PCBs are still detected in air above a sample treated with fixative. Thus, exposure and release would still be possible without institutional controls. See Response 39 of this section for the difficulties associated with institutional controls. Through excavation and removal, all significant risks to human health and the environment at the site will be eliminated and thus EPA's preferred alternative offers increased public health protection at the site as compared to capping or fixation.

22. Comment: Page 14, lines 12 through 23; Page 15, lines 1 through 5. TBG disagrees with EPA's conclusion in the Draft FS that fixation is not a permanent remedy. TBG quotes Section 121 (b)(1) of SARA and interprets this section and page 131 of the draft NCP to mean that permanent solutions under CERCA include those which significantly and partially reduce volume, toxicity, or mobility. TBG states that "permanence does not necessarily mean complete destruction of the hazardous substance, but can include a significant and partial reduction in toxicity, mobility or volume."

22. Response: CERCLA Section 121(b)(1) states that remedial actions in which "treatment which permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances, pollutants, and contaminants is a principal element, are to be preferred over remedial actions not involving such treatment." Section 121(b)(1)(G) directs the President to select a remedial action "that utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable." These directives strongly encourage the use of treatment in remedial actions while recognizing that flexibility is necessary to deal with site circumstances and

technological, economic, and implemention constraints that place practical limitations on the use of treatment technologies. The statute does not state or imply that all treatment satisfies the statutory preference; only remedial actions of which a principal element is treatment which "permanently and significantly reduces volume, toxicity or mobility" of the contaminant are preferred (emphasis added).

TBG argues that fixation qualifies for this statutory preference. However, TBG quotes a different portion of Section 121. The portion quoted by TBG describes the entire range of treatment technologies which the President is directed to assess in choosing a remedial action; this range is to include "permanent solutions and alternative treatment technologies or resource recovery technologies that, in whole or in part, will result in a permanent and significant decrease in the toxicity, mobility, or volume of the hazardous substance, pollutant, or contaminant. In making [the] assessment, the President shall specifically address the long-term effectiveness of various alternatives." §121(b)(1) (emphasis added). This part of §121 does not describe the most preferred type of alternative but rather a range of alternatives to be considered. To meet the preference for a permanent remedy, a remedy must use treatment that permanently and significantly reduces toxicity, mobility, or volume as a principal element. Fixation does not fall into this category because the reduction of mobility which would result does not address a pathway of significant concern at the MGM Brakes site. See Response 24.

TBG again quotes the Draft NCP; this document has not been adopted by EPA and does not represent Agency policy. Moreover, TBG cites this document for the proposition that "[t]reatment alternatives that significantly reduce volume, toxicity, or mobility of hazardous substances are 'permanent' solutions." TBG Comments at page 14 (citing Draft NCP at 131). The cited document does not support this broad claim. The problem with this statement is it assumes any remedial action involving some treatment that results in any reduction of toxicity, mobility, or volume meets the statutory preference for permanence; this ignores the specific language of the statute, which requires that this treatment be a principal element of the preferred alternative. Also, the language of the Draft NCP describes the upper range of treatment alternatives to be considered as involving "remedies that completely destroy, detoxify, or immobilize the hazardous substances and leave no need for further long-term management . . ." Draft NCP at 131. Fixation would require monitoring and land use restrictions for an indefinite period of time. Thus, this remedy does not fall within the upper, more permanent end of the range of treatment technologies.

23. Comment: Page 15, lines 6 through 16. TBG continues its comments on "the concept of permanence," quoting Section 122 (f)(2)(B), CERCLA's covenant not to sue for remedial actions involving "treatment of hazardous substances so as to destroy, eliminate, or permanently immobilize the constituents of such substances." TBG states that such a remedy is deemed sufficiently permanent to allow EPA to surrender

its enforcement authority with regards to a site when such a remedy is employed.

23. Response: The subsection to which TBG refers defines treatment remedies for which EPA is authorized to enter a covenant not to sue more fully than the limited quote TBG included. The subsection refers to a remedy "which involves the treatment of hazardous substances so as to destroy, eliminate, or permanently immobilize the hazardous constituents of such substances, such that, in the judgment of the President, the substances no longer present any current or foreseeable future significant risk to public health, welfare, or the environment..." 42 U.S.C. §9622(f)(2)(B) (emphasis added). Only incineration meets this definition for the MGM Brakes site. See also Response to Comments 22 and 24.

24. Comment: Page 15, lines 17-24; page 16, lines 1-24, page 17, lines 1-7. TBG states that fixation is clearly a permanent remedy and claims that EPA has described fixation as a "viable treatment alternative which, at a minimum, reduces mobility of PCBs in soil and therefore meets the CERCLA preference for treatment as a principal element of the remedy," citing Table 4-1 of the Draft RI/FS Guidance, and several Superfund Records of Decision (RODs) at other sites. Citing the Chemical Control ROD at p. 29, TBG states that EPA has described fixation as a permanent solution due to its ability to reduce the toxicity as well as the mobility of PCBs in soil. TBG claims that fixation permanently and significantly reduces the mobility of PCBs in groundwater and surface water and presents information on the long-term stability of fixed monoliths over geologic time. TBG also refers to unpublished data identified through a telephone contact with International Waste Technologies (IWT, a fixation vendor) that "suggest" fixation "may cause significant chemical changes" to PCBs. TBG concludes, therefore, that fixation may also permanently and significantly reduce PCB toxicity.

24. Response: Table 4-1 of the Draft RI/FS Guidance does not support the proposition for which TBG cites it. The table simply lists excavation and treatment and in situ treatment as possible response actions for a site involving soil contamination with carcinogens. The table contains no statement or information about the ability of fixation to reduce mobility of PCBs in soil, and does not represent that fixation meets CERCLA's preference for treatment as a principle remedy, as TBG claims. In fact, fixation is not even mentioned anywhere in Table 4-1.

The question of whether fixation significantly and permanently reduces toxicity, mobility, or volume and, therefore, meets CERCLA's preference for treatment as a principal element of the remedy, must be addressed in relation to the MGM Brakes site, not other sites with different soil conditions, exposure pathways, etc.[1] In the FS, EPA clearly states that fixation does reduce the mobility of PCBs. However, this alone does not make fixation a permanent remedy. As described in Response 22, permanent remedies are those that would involve, as a principal element, treatment that permanently and significantly reduces volume, toxicity or mobility. Such remedies are preferred because they significantly and permanently reduce the risk at the site. Reducing the mobility of PCBs does not significantly and permanently reduce the risk that the contaminants pose to human health. As stated in the FS, EPA does not consider groundwater mobility to be significant sources of risk at the site. TBG's own comments state that "[b]ecause the need for control of horizontal migration in groundwater is not an appropriate remedial objective for this site, it should not be used as a criteria for selection of remedial alternatives. TBG's, comments Appendix B, p.3. See also, TBG's Comments at p. 23.

The principle threats at the site arise from the toxicity of PCBs or, more specifically, through the inhalation of PCB vapors, ingestion and direct contact. TBG refers to data that "may" indicate a reduction in toxicity; this data was not provided to EPA. Since no data has been provided which demonstrates that fixation produces the chemical bond breaking energy sufficient to alter PCBs, EPA must rely on existing data. Data provided to EPA by K/J/C show that the PCBs are neither chemically bound nor chemically altered by fixative agents, and therefore, their toxicity is unchanged. Additional data provided to EPA by K/J/C shows that air emissions of PCBs still occur above a sample which has been treated with a fixative agent. No actual data exists on the toxicological effects of fixed material on human health and the one available research paper on the effects of fixed soil to aquatic life shows that the fixed material is more toxic when compared to untreated soils (Green et. al., 1987).

Under the fixation alternative, PCBs would not be chemically altered and would be left at the site. TBG has not provided data that shows that fixation reduces the significant health risks at the site through treatment that significantly reduces toxicity, mobility or volume. Instead, the principal threats are addressed by the cap which is placed over the soils once they have been treated with the fixative. To ensure that the substances no longer present any current or foreseeable risk to human health, the site would have to be monitored and its future use restricted. Fixation is not a permanent remedy within the meaning of CERCLA Section 121(b).

25. Comment: Page 17, lines 9 through 24; Page 18, lines 1 through 17. TBG notes CERCLA's preference that off-site disposal without treatment be the least favored remedial alternative where practicable treatment technologies are available. TBG states that the Draft RI/FS Guidance

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[1] For example, PCB levels at the Chemical Control site in New Jersey range from non-detectable to 6 ppm. The highest levels are well below EPA's clean-up level of 10 ppm, which is designed to provide adequate protection of human health and the environment. Therefore, the issue of whether fixation is a permanent remedy for remediation of PCBs at this site never arises because the PCB levels do not represent a significant threat. The cited RODs were reviewed and considered, along with other information in the record. Nothing contained in these RODs changes EPA's decision that fixation is not a permanent remedy for this site within the meaning of CERCLA §121(b).

"does not suggest off-site disposal without treatment as a remedy in any situation." TBG also states that there is no evidence that EPA considered this preference in the development or evaluation of remedial alternatives for the MGM Brakes site. TBG asserts that alternatives such as fixation and capping "adequately protect health and the environment at a lower cost than off-site disposal" and that, therefore, "CERCLA requires that off-site disposal be rejected."

25. Response: CERCLA's preference that off-site disposal be the least favored alternative where practicable treatment technologies are available is just that - a preference. The requirement to use treatment technologies "to the maximum extent practicable" recognizes that there will be circumstances that will limit the use of specific treatment technologies at specific sites. The law does not state that off-site disposal cannot be used in any specific situation. TBG's statement that the Draft RI/FS Guidance never suggests that off-site disposal be considered as a remedy in any situation is false. Table 4-1 (previously cited by TBG, see comment 24) lists disposal excavation as a general response action for sites involving soil contaminated by carcinogens (as is the case at the MGM site).

EPA did consider CERCLA's preference when developing remedial alternatives (see Draft FS, at 5-2 to 5-3) but did not view the preference as adequate justification for eliminating this alternative from the list of those to be fully analyzed. After full analysis and evaluation, EPA chose off-site disposal as the remedial alternative for this site because it achieves the best balance of legitimate CERCLA goals, taking into account the relevant risks (see Section X of the Record of Decision). TBG's assertion that fixation or capping must be chosen because they are cheaper and provide "adequate protection" is also incorrect. EPA has determined that off-site disposal provides more protection of the environment and human health, and also that community acceptance of off-site disposal is greater. Furthermore, neither fixation nor capping meets the requirements for "permanent treatment" under CERCLA (see Response 24). Therefore, EPA's choice of off-site disposal as the remedial action for this site is supported by the record and meets CERCLA's requirements.

26. Comment: Page 18, lines 18 through 23; Page 19, lines 1 through 25; Page 20, lines 1 through 15. TBG presents introductory material on applicable or relevant and appropriate requirements (ARARs). TBG cites CERCLA and the Draft NCP.

26. Response: Text is noted as presented, although EPA again notes that the Draft NCP has not been adopted and does not constitute Agency policy.

27. Comment: Page 20, lines 16 through 26; Page 21, lines 1 through 23; Page 22, lines 1 through 19. TBG argues that the TSCA PCB disposal and treatment requirements are neither applicable nor relevant and appropriate for the MGM Brakes site. TBG argues that the TSCA requirements are not applicable to spills which occurred prior to February 17, 1978, and are only relevant and appropriate to remedies involving excavation and removal of PCB contaminated soil. TBG states

that because PCBs at the MGM Brakes site were disposed of prior to 1978, they are considered to be "in service" and are not required to be removed for disposal. If the PCBs are removed, however, they must be disposed of in accordance with TSCA regulations. TBG finally argues that spills which occurred prior to February 17, 1978, should be remediated on a case-by-case basis and only if warranted by potential risks to public health and the environment.

27. Response: TSCA's requirements regarding disposal of PCBs are applicable to all alternatives which involve removing the PCB soil from the ground, including incineration, excavation and fixation, and off-site disposal. This is because, by their own terms, the requirements apply to PCBs or PCB items removed from a disposal site at which they were desposited prior to February 17, 1978. See 40 CFR Part 761 Subpart D, Note. The regulations specifically require contaminanted PCB soil to be disposed of in an incinerator or an approved landfill. 40 CFR §761.60(a)(4).

EPA also determined that TSCA's requirements regarding PCB disposal are relevant and appropriate for all other remedial actions at the site. This determination is based on the similarity of the affected media, the fact that the same hazardous substance is involved, and the fact that these regulations were developed to address a problem sufficiently similar, in EPA's judgement, to that faced at the MGM Brakes site to justify their adoption as an ARAR. The February 17, 1978 jurisdictional date has therefore been waived. In EPA's judgment, TSCA's requirements are well-suited to address the environmental and public health risks present at the MGM Brakes site.

28. Comment: Page 22, lines 20 through 25; Page 23, lines 1 through 24, Page 24, lines 1 through 25, Page 25, lines 1 to 4. TBG argues that the 50 feet to groundwater requirement for landfills containing PCBs is not appropriate for the MGM Brakes site due to site-specific conditions, specifically, the low mobility of PCBs in the groundwater systems below the site. TBG cites post SARA Records of Decision (RODs) in which the TSCA 50-feet to groundwater requirement is either disregarded or not mentioned for on-site containment or fixation. TBG discusses EPA's ability to grant a waiver to the TSCA landfill criteria, citing 40 CFR §761.73(c)(4). TBG argues that even if the TSCA disposal standards are relevant and appropriate, EPA would only be required to comply with the substance of the rule, not the formal process. TBG states that the substantive requirements of the waiver process can be satisfied through the FS and ROD process, and that "[a]ny refusal by EPA to even consider a waiver is arbitrary and capricious and an abuse of discretion."

28. Response: The TSCA regulations do contain a provision for the discretionary waiver of any of the requirements contained in 40 CFR §761.75(b). See 40 CFR §761.75(c)(4). The Regional Administrator may grant such a waiver if he finds that doing so would not result in an unreasonable risk of injury to health or the environment. Id. Based on the information contained in the Administrative Record, it has been determined that granting a waiver of all of 40 CFR §761.75(b)'s requirements designed to ensure groundwater protection would not

result in an unreasonable risk for this site. The following requirements are not waived: 40 CFR §761.75(b)(4),(5),(6),(7),(8) and (9. This finding is based on EPA's determination that although the groundwater at the site is already contaminated, the contaminated aquifer is not usable due to low yields and because the rate of movement of the contaminants is highly attenuated and, therefore, impacts to the downgradient aquifer are not anticipated. See also, FS at page 1-17. Therefore, the requirements of 40 CFR §761.75(b)(1),(2) and (3), which are designed to ensure protection of groundwater, are waived for all of the remedial actions at this site; this includes the 50 feet to groundwater requirement.

TBG is correct in stating that the substantive elements of the waiver provision can be applied through the FS and ROD process. EPA has done so in this case. EPA also notes that the statement contained in the FS (p. 2-6) that Region 9 had never granted a waiver of any TSCA requirements is incorrect. A waiver of some requirements was granted to Chem Waste Management for the Kettleman Hills landfill. The 50-feet to groundwater provision was not waived in that case, however.

29. Comment: Page 25, lines 5 through 23, page 26, lines 1 through 10. TBG presents introductory and informational matter on the TSCA PCB Spill Cleanup Policy (the "Spill Policy") of April 27, 1987.

29. Response: The material provides an introduction to the specific comments which follow it. No comment is raised which is not responded to later in this Responsiveness Summary.

30. Comment: Page 26, lines 11 through 24, page 27, lines 1 through 8. TBG questions EPA's designating the PCB Spill Cleanup Policy as "relevant and appropriate" to the MGM Brakes site. TBG states that no analysis is provided to show why the rationale for the policy is relevant to the site and claims that the policy "expressly states that the underlying policy rationale is probably not relevant to historic spills". TBG argues that the policy is not relevant and appropriate to the MGM site because it addresses exposures and risks associated with typical electrical equipment spills and specifically exempts spills that occurred before May 4, 1987 because of the likelihood that PCBs will be more pervasive and harder to clean up at these sites. TBG notes that the contamination at the MGM Brakes site is deeper and more extensive than that at a fresh electrical equipment spill.

30. Response: The TSCA Spill Policy has not been identified as an ARAR, but rather as a "To Be Considered" (TBC) criteria. Furthermore, also contrary to TBG's claim, the TSCA Spill Policy itself does not state that the underlying policy rationale is probably not relevant to historical spills. Instead, the policy states that historical spills will require a site-by-site evaluation because of the "likelihood that the site involves more pervasive contamination than fresh spills and because old spills are generally more difficult to clean up than fresh spills." 40 CFR §761.120(a)(1)(ii). This policy recognizes that the standards contained therein may be applied to CERCLA remedial actions involving historical spills as a discretionary matter. 40 CFR §761.120(a) (1)(ii) and §761.120(e)(a).

EPA has used the 10 ppm clean up level from the Spill Policy because it represents a 10^{-5} oncogenic risk for PCBs, which is consistent with CERCLA clean-up goals. Thus, for alternatives that involve excavation and/or treatment, 10 ppm represents the level that is protective of public health - a primary requirement of CERCLA. The fact that the Spill Policy is not applicable to historical spills does not change the level of risk that 10 ppm represents. As discussed in Response 8, the OHEA risk assessment used as the basis of the Spill Policy was also used by EPA in a policy specifically developed for historic spills regulated under CERCLA. See (EPA 1988a), Appendix F at 1. The TSCA Spill Policy was adopted as necessary, in EPA's best professional judgment, to set a clean-up level at the site which would protect human health.

31. Comment: Page 27, lines 8 through 20. TBG states that cleanup levels presented in the Spill Cleanup Policy are based on the risks associated with inhalation of volatilized PCBs, and that the Spill Cleanup Policy clean-up levels may be germaine to fresh spills, not historical spills which have dissipated volatile fractions of PCBs. To support its argument, TBG compares its atmospheric PCB data collected at the site to the assumptions in the Advisory Document on which the Spill Policy is based.

31. Response: The exposure assessment in the OHEA advisory document used in developing the Spill Policy clean-up levels takes into account the depletion of PCBs to the atmosphere over a seventy-year period of exposure (OHEA at p. 1-4.) Thus, TBG's argument that the Spill Policy is not germaine because the advisory document does not take into account spills with dissipated volatile fractions of PCBs is based on an incorrect premise. Furthermore, the air data from the site can only be used qualitatively and cannot be considered representative of the actual site concentrations, as discussed in Response 13.

32. Comment: Page 27, lines 21 through 25, page 28, lines 1 through 8. TBG states that it believes EPA has misinterpreted and misapplied the PCB Spill Cleanup Policy and incorrectly concluded that the policy's standards are appropriate for the MGM Brakes site. TBG's reasoning is that relevancy and appropriateness are related to specific site circumstances in relationship to the objectives, purpose and origin of the standard. TBG requests that EPA reconsider EPA's analysis and develop site-specific remedial clean-up standards.

32. Response: EPA has not labelled the Spill Policy as an ARAR. As discussed in Response 30, EPA used the Spill Policy to determine a clean-up level which is protective of human health for alternatives involving excavation or treatment. The clean-up level of the Spill Policy, in turn, was based on the exposure and risk assessment of the OHEA document. EPA carefully assessed the specific conditions at the MGM Brakes site before selecting the 10 ppm cleanup level. The objectives, purpose, and origin of the OHEA document which are discussed below clearly indicate that the document and the 10 ppm clean-up level are well-suited to the site conditions at MGM Brakes.

- o Page vii states that the purpose of the document is to provide advisory levels for PCB clean-up and to describe the detailed technical and scientific rationale used in developing these advisory levels for PCBs in contaminated soil.

- o The document includes a specific analysis of Arochlor 1242, the major PCB contaminant at the MGM Brakes site; it was determined that for this specific PCB Arochlor a range of 4-6 ppm represents a 10^{-5} oncogenic risk, which EPA has determined to be an acceptable risk level for a CERCLA site.

- o The document used EPA's standard exposure assumptions appropriate for a site with residences extremely close by and anticipated unrestricted-access future use.

- o Page vii states the document was specifically done for EPA's Office of Solid Waste and Emergency Response, the Office within EPA Headquarters responsible for Superfund guidance. In January of 1986, this same office developed a national policy entitled "Recommenation on Removal Action Level for PCB's in Soil Based on Health Effect." Using the exposure and risk assessment developed in the OHEA document, the policy "set forth the advisory limitations of PCB in soil considered permissible in protecting the health of the public affected by contaminated sites regulated under CERCLA." See EPA (1988a), Appendix F, at 1.

Furthermore, a likely future use of the site will be residential or unrestricted access, making the Spill Policy's 10 ppm clean-up level more appropriate than the 25 ppm used for restricted access areas. See also Response to Comments 4 and 8.

33. Comment: Page 28, lines 9 through 25, page 29, line 1. TBG states that the PCB Spill Cleanup Policy's clean-up levels are inappropriate for the MGM Brakes site. TBG states that the Policy allows less rigid clean-up levels if site specific characteristics or reduced risk levels warrant this. TBG concludes that because the FS states that capping or fixation would adequately protect human health and environment at substantially less cost than excavation and removal to a PCB concentration of 10 ppm, clean-up to the 10 ppm level is not warranted.

33. Response: EPA considers the risks at the site sufficient to warrant remedial action. The reasons the 10 ppm clean-up level was adopted were elaborated in Reponses 30 and 32. EPA did not elimimate capping or fixation solely on the basis that they did not meet the 10 ppm level of the Spill Policy. Instead, these remedies were also rejected due to: (1) the lack of developed mechanisms to enforce institutional controls; (2) neither capping nor fixation is a permanent remedy; (3) community preference for off-site disposal; and (4) likely future uses of the site.

34. Comment: Page 29, lines 1 through 17. TBG states that since SARA was passed, EPA has signed *at least* seventeen Records of Decision for sites contaminated with PCBs, and that only 2 (11%) of those 17 RODs selected off-site disposal (emphasis added). TBG goes on to give the percentage of the seventeen RODs that selected capping, incineration and fixation. TBG concludes that it would be inconsistent to apply a 10 ppm clean-up level for the MGM Brakes site, given these prior RODs and the FS determination that capping or fixation would adequately protect human health and the environment.

34. Response: TBG's seventeen post-SARA RODs do not represent on inclusive listing of all post-SARA RODs signed by EPA at sites involving PCB contamination. For example, other RODs involving PCB contamination signed since SARA include the Resolve site in Region I and Laskin/Poplar in Region 5 - neither of which selected TBG's perferred alternatives of capping or fixation. Therefore, the percentages of RODs in each category as stated by TBG are meaningless except to indicate the number of ROD's among the seventeen TBG chose to select as examples that selected a particular remedy. Because an alternative was selected by EPA at another Superfund site in the country does not mean that it is appropriate for the MGM Brakes site in Cloverdale, California. SARA requires EPA to consider many factors in selecting a remedy. EPA has developed nine criteria which directly relate to the factors SARA mandates that EPA assesses. EPA has selected the alternative that represents the best balance of these criteria. Criteria such as short-term effectiveness require a site-specific determination. Others, such as implementability, depend on the physical characteristics of the site. The cited RODs were reviewed and considered, along with the other relevant information in the record. EPA decided that at this site, off-site disposal best meets CERCLA and SARA's requirements. The comparative elements of this decision are further elaborated in the attached ROD.

35. Comment: Page 29, lines 18 through 25, page 30 lines 1 through 12. TBG disputes the requirement for a liner for the capping alternative. TBG cites RCRA regulations that provide an exemption for liners for existing portions of landfills. TBG argues that because PCBs are in place, they should be treated as an existing portion of a landfill and regulations regarding liners should not be applied.

35. Response: EPA agrees with TBG that the requirements for a liner should not apply to the capping alternative. EPA has incorporated this change into the Record of Decision.

36. Comment: Page 30, lines 13 through 21. TBG states that under the "California Code of Regulations," the soils at MGM Brakes should not be classified as extremely hazardous because only materials with PCBs greater than 5,000 ppm are classified as extremely hazardous and the maximum concentration detected at the site was 4,500 ppm.

36. Response: EPA concurs that the soils should not be classified as extremely hazardous under California Regulations unless they are contaminated with PCBs of 5,000 ppm or greater; so far no such levels have been found in the soil. However, EPA notes that a concrete core

sample contained 5,400 ppm PCBs; this level is classified as extremely hazardous waste under California's regulations. Concrete PCB concentrations will need to be monitored closely during remediation to determine which are extremely hazardous.

37. Comment: Page 31, lines 13 through 23, page 32, lines 1 and 2. TBG states that EPA omitted a substantive discussion of the alternatives in terms of human health and environmental protectiveness. TBG has provided its own risk comparison of the alternatives. TBG claims that in the long-term, all identified alternatives provide essentially the same protectiveness. TBG claims, however, that in the short-term, alternatives involving excavation have double the risk of other alternatives. TBG concludes that capping and in situ fixation would result in the lowest overall risks to the Cloverdale community.

37. Response: The FS did contain a substantive discussion of the public health and environmental benefits and risks afforded by each alternative. Each alternative was evaluated in terms of both its long-term effectiveness in protecting public health and its short-term effectiveness in terms of adverse impacts during implementation.

As discussed in Responses 21 and 25, the alternatives to off-site disposal do not offer the same long-term protection of public health. In addition, TBG's claims regarding the short-term risks of the alternatives are based on invalid assumptions about the amount of dust generated. TBG overstates the risks of all the alternatives. Furthermore, the short-term risks of excavation alternatives estimated by TBG's consultants Health Risk Associates are within the 10^{-5} to 10^{-7} risk range that EPA considers acceptable. (See Section III.D and Section III.E)

38. Comment: Page 32, lines 3 through 21. TBG provides introductory statements regarding its preference for on-site capping as the remedial alternative for the MGM Brakes site.

38. Response: Responses to these general comments are provided in detail in Responses 39 through 43, below.

39. Comment: Page 32, line 22, Page 32, lines 1 through 25, page 34, lines 1 through 23. TBG questions the Draft FS statement that land use restrictions are unacceptable because "EPA does not currently have a program established under Superfund to insure that institutional controls are implemented or maintained either at the federal or state level." TBG cites RODs that it describes as including institutional controls as part of remediation. TBG also cites the Draft NCP for the proposition that the use of non-engineered controls is to be encouraged. TBG further argues that EPA has the authority to monitor sites and enforce restrictions through CERCLA's provision for inspecting sites every 5 years after remediation. TBG adds that any consent agreement between EPA and TBG could provide a mechanism for long-term enforcement of institutional controls. TBG also cites other institutional controls, which it asserts would require no enforcement by EPA; these include fencing, deed restrictions, City building permits, and agreements between the California Department of Health

Services and the property owner setting forth land use restrictions which the State could enforce through civil and criminal actions pursuant to California Health and Safety Code §25221.1 et seq. and §25236. TBG concludes that the State, City, and EPA have the means to enforce restrictions and EPA's refusal to consider these controls is arbitrary, capricious, and an abuse of discretion.

39. Response: A distinction must be made between the authority of EPA to adopt "institutional controls" and the development of the administrative capability to successfully implement and enforce such controls. TBG refers to several legal citations which it argues provide adequate legal authority for EPA, the state, and/or local government to mandate restrictions on land use at the site. While EPA questions whether all of the cited examples actually provide the authority, TBG ascribes to them[1], EPA did not base its decision to reject institutional controls at the site on any perceived lack of legal authority but rather on a policy judgement that implementation and enforcement capabilities for oversight of the types of controls needed at this site have not been adequately developed. Therefore, their reliability in protecting human health and the environment is questionable. EPA also rejected these controls because of the additional resource drain which is involved in the oversight and enforcement of such mechanisms. Effective use of such remedies would require EPA to continue indefinitely to devote investigatory and legal resources to penalize the landholder or its successor or otherwise ensure compliance with any restrictions.[2] Instead, EPA has decided to dispose of the waste at a permitted landfill. Such facilities are highly regulated as a matter of course. The Regional Administrator's decision must also be viewed in the larger context — many Superfund sites exist in Region IX's territory. The Region desires to avoid a proliferation of many permanent, individual sites requiring extensive

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[1] For instance, TBG states that deed restrictions could be used to assure that the cap and fence are maintained, and that no further enforcement by EPA would be necessary. However, a legal issue arises as to who is obligated to perform such affirmative actions if the property owner or any successor in interest becomes insolvent, or leaves the jurisdiction.

[2] TBG's statement that the use of state or local legal authorities would somehow absolve EPA of any responsibility for continued oversight is inconsistent with EPA's role as the lead agency at this site. For instance, TBG states that deed restrictions would require no enforcement by EPA. However, EPA would not view such a restriction as effective unless a means were established for governmental enforcement of the restriction; EPA would not view the traditional means of ensuring compliance with such a restriction (e.g., a lawsuit by the former private property owner or by a private property owner meant to benefit from the restriction) as an adequate assurance of enforcement, considering the risks involved in leaving PCBs above 10 ppm on-site. The Draft NCP, referred to by TBG, specifically states that "[w]hen [institutional] controls are used, the lead agency must ensure that the controls remain in place and that they are effective in preventing exposure to hazardous substances for as long as those substances remain hazardous." Draft NCP at 115.

monitoring and enforcement efforts for the indefinite future. This is not to say that institutional controls would never be appropriate, but only that, in deciding whether or not to use institutional controls at a given site, the Regional Administrator may properly consider the overall effect on regional resources and priorities, as well as the long-term need to preserve the Superfund.

TBG incorrectly states that "the Draft NCP encourages the use of 'non-engineered controls' to supplement engineered controls to prevent or limit exposure to contaminated areas." (citing Draft NCP at 115) (emphasis added). The Draft NCP notes that "[a]s appropriate, non-engineered controls may supplement engineered controls in managing hazardous substances . . ." Draft NCP at 115 (emphasis added). The document also states that "[n]on-engineered mechanisms. . . will not substitute for more active responses . . . "Draft NCP at 115. Nowhere does the Draft NCP encourage the use of institutional controls or state any type of preference for their use. In this case, for the reasons elaborated above, the Regional Administrator determined that such controls would not be appropriate.[3]

40. Comment: Page 35, lines 1 through 16. TBG argues that capping would eliminate what it considers to be the principal pathway for release of PCBs, namely surface water, and would also prevent air emissions. TBG also argues that capping would reduce groundwater mobility by preventing rainwater intrusion. TBG claims that bacteria present at the site "may have the potential to degrade PCBs" (emphasis added) and, therefore, that capping may result in a permanent remedy.

40. Response: EPA agrees that capping reduces surface water migration and volatility of PCBs. Capping also results in long-term land use restrictions and site monitoring, activities which conflict with the likely future use of the site and place a long-term burden on EPA to monitor and enforce the restrictions. EPA disagrees that capping would reduce groundwater mobility. Capping would prevent some vertical movement of PCBs, but vertical movement has not been an issue since the ethelyne glycol at the site was degraded. With the high groundwater conditions at the site, which capping cannot appreciably lower, and the presence of a large portion of PCBs within the active groundwater zone, slow horizontal movement of PCBs will still occur.

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[3] TBG also cites four Records of Decision (RODs) from other areas of the country where institutional controls were part of the selected remedy. These RODS have been reviewed and considered as part of the decision making process in this case. The factual situations are different from that at the MGM Brakes site. For example, three of the four RODs cited by TBG involve clean-up of landfills which failed. These sites involved many different contaminants and large land areas, and had been planned as the final terminus for the wastes which they contained. The fourth ROD (Kane and Lombard Site) involves fencing and inspections, not deed restrictions such as would be needed at the MGM Brakes site. Nothing in these RODs changes the decision that institutional controls are inappropriate in the instant case.

Capping cannot prevent groundwater upgradient of the site from continuing to flow through the site and come in contact with PCBs.

With regards to biodegradation of PCBs, existing data (EPA, 1985) show PCB molecules with 3 or less chlorine atoms to be utilized by microorganisms. These data also show that more highly chlorinated molecules, such as those present at the site, are not degraded by microorganisms. The presence of microorganisms does not in itself prove that the potential for bioremediation exists. TBG has offered nothing further on which to base a conclusion that this potential exists at the site.

41. Comment: Page 35, lines 17 through 23, page 36, lines 1 through 4. TBG repeats its argument that the TSCA PCB Spill Cleanup Policy is not applicable or relevant and appropriate to remediation of the MGM Brakes site. TBG again argues that the 10 ppm clean-up level is unwarranted given site-specific characteristics.

41. Response: The basis for EPA's use of the Spill Policy 10 ppm clean-up level at the site is contained in Responses 4, 8, 9, 27, 30, 31, 32, and 33.

42. Comment: Page 36, lines 5 through 24, page 37, lines 1 through 6. TBG repeats its argument that the TSCA PCB disposal requirements are only relevant and appropriate for PCB-containing soils removed from the site for off-site disposal and not appropriate for "in service" PCBs. TBG states that the RCRA liner requirements would not apply to the capping alternative because the site can be considered an existing landfill.

42. Response: The basis for EPA's determination that TSCA's PCB disposal requirements are relevant and appropriate to remedial alternatives which do not involve excavation of soil at the site is fully set forth in Response 27. EPA's decision to waive the requirements of 40 CFR §761.5(b) is set forth in Response 28. EPA agrees that RCRA's liner requirement should not be considered an ARAR for the capping alternative. See Response 35.

43. Comment: Page 37, lines 7 through 21. TBG repeats its argument that the TSCA 50-feet to groundwater requirement should be disregarded.

43. Response: EPA agrees that this requirement should be waived based on a finding of no significant environmental or public health risk.

44. Comment: Page 37, lines 22 and 23, page 38, lines 1 through 7. TBG claims that capping is clearly the cost effective remedy for the MGM Brakes site, (emphasis added) because it would achieve protection of human health and the environment in the most cost-efficient way.

44. Response: As discussed in Response 21, in selecting a cost effective remedy EPA must consider the remedies overall effectiveness in relation to its costs. Protection of human health and the environment is one component of overall effectiveness. Other criteria EPA considers in selecting a cost effective remedy include long-term

effectiveness, ability to meet ARARs, and State and community acceptance. As stated in the ROD, off-site disposal represents a cost-effective remedy, given all the criteria EPA must consider.

45. Comment: Page 38, lines 8 through 18. TBG states that fixation may be a more acceptable remedy than capping. TBG bases this statement on its claims that fixation uses treatment to permanently and significantly reduce PCB mobility, is protective of human health and the environment, meets ARAR's, has long-standing community acceptance, and may reduce toxicity.

45. Response: EPA agrees that fixation may be a better remedy than capping but it has determined that off-site disposal is superior to both, for the reasons elaborated in the attached Record of Decision. EPA also agrees that fixation uses treatment to reduce the mobility of PCBs, however, EPA disagrees with TBGs assertion that mobility is permanently and significantly reduced. As discussed in Response 24, the data provided to EPA by K/J/C show that the PCBs are neither chemically bound nor chemically altered through fixation, but instead can be extracted, unchanged. It has not been established that fixation reduces the toxicity of PCBs. More importantly, PCB groundwater mobility is not the main source of risk; rather, PCB volatility is. Therefore, although the FS states that fixation would protect human health, it would only do so in combination with a maintained soil cap and/or air monitoring to ensure that air emissions would not exceed those levels that would pose a risk to public health. This would involve restricted use of the site, and a resource burden on EPA to enforce the deed restrictions.

TBG has not provided any support for the statement that fixation has long-standing community acceptance. It is true that some community members expressed a preference for fixation over on-site incineration during the period when EPA's preferred alternative was incineration. During the public comment period on the revised FS (EPA, 1988a), EPA did not receive any comments regarding fixation from anyone other than TBG and its consultants. Many members of the community have expressed support for off-site disposal.

46. Comment: Page 38, lines 19 through 23, page 39, lines 1 through 7. TBG agrees with EPA's conclusion that in situ fixation would not have the short-term human health impacts of alternatives involving excavation. They then reference an assessment conducted by Health Risk Associates, (TBG's Appendix C), claiming that it shows that capping and fixation pose the lowest risk of PCB exposure to the Cloverdale community.

46. Response: The Health Risk Associates' report is responded to in Section III.E, below.

47. Comment: Page 39, lines 8 through 23. TBG asserts that fixation is a permanent remedy capable of reducing PCB mobility and potentially, toxicity.

47. Response: See Responses 22, 23, and 24 for the reasons why fixation cannot be considered a permanent remedy (including specific responses regarding TBG's mobility and toxicity reduction claims).

48. Comment: Page 39, line 24, page 40, lines 1 through 21. TBG references data on the short- and long-term durability of the fixed monolith, including: (1) the pilot study referenced in the Draft FS; (2) the scientific community's observation of the durability of pozzolanic monoliths; and (3) the fact that the U.S. Department of Energy's (DOE) criteria for immobilization of transurancies with half-lives on the order of 250,000 years are met by monoliths made of cement-based materials. TBG again claims that fixation may reduce PCB toxicity.

48. Response: Comparing fixation of soils at the MGM Brakes site to DOE's immobilization of radioactive matter is inappropriate because the monoliths created by DOE will exist in remote waste disposal repositories that will not be within established communities. A monolith within Cloverdale would conflict with the City's long- and short-term plans for the vicinity of the site. EPA agrees that the fixed monolith may be extremely durable in the sense that the rate of PCB migration in groundwater would be very slow and that the monolith would survive for millenia in a non-acidic environment. EPA's response to the claim that fixation may reduce toxicity is in Response 24.

49. Comment: Page 40, lines 22 through 23, and page 41, lines 1 through 13. TBG argues that the TSCA PCB Spill Policy, and the TSCA PCB disposal requirements (including the 50 feet to groundwater provision) are not relevant and appropriate for the fixation alternative.

49. Response: The bases for adopting the TSCA Spill Policy at this site are set forth in Responses 30, 31, 32, and 33 above. These bases include justification for adopting these requirements vis-a-vis the fixation alternative. The TSCA PCB disposal requirements are dicussed in Responses 27 and 28.

EPA has agreed that RCRA's liner requirement is not an ARAR for this site (see Response 35). However, this does not mean that other RCRA landfill requirements are not relevant and appropriate, as TBG itself states several times. See TBG's comments at pp. 29, 36.

50. Comment: Page 41, lines 14 through 25, Page 42, line 1. TBG repeats its comments regarding institutional controls discussed in Comment 39, stating that they are specifically relevant to fixation. TBG feels that it would take "extraordinary means to destroy the integrity of the fixed monolith," and that institutional controls, therefore, "may not even be necessary."

50. Response: Because data provided by TBG's consultants show that PCBs are not fixed and are capable of being volatilized and extracted from fixed soils, the monolith would need to be capped. Institutional controls would therefore be necessary to ensure integrity of the cap.

restrictions are incompatible with the likely future use of the area, and are therefore not supported by the community. The need for long term oversight and monitoring, when considered in view of the Region's overall Superfund program and need to address many National Priority List sites, also represents a resource and management burden which provides an added justification for moving the waste to a site with other wastes, which will be overseen and monitored as part of the Agency's ongoing program to regulate TSCA and RCRA landfills (see also Response 54 below).

54. Comment: Page 43, lines 8 through 15. TBG notes that the preferred alternative provides a permanent solution for the site only, not for the facility receiving the waste.

54. Response: EPA recognizes that off-site disposal transfers the contaminated soil to another location. However, the alternative also moves the soils from an area that was never intended for the long-term management of hazardous wastes to one that was specially designed and permitted under strict Federal and/or State laws to handle this type of material. The off-site facility selected will fully comply with Section 121(d)(3) of SARA, which is even more stringent than the TSCA requirements. In addition, the facility will have the institutional controls in place to maintain and monitor the integrity of the waste disposal unit. EPA considered the uncertainties associated with land disposal before reaching its final decision for this site.

55. Comment: Page 43, lines 16 through 24, page 44, lines 1 through 8. TBG claims that EPA's cost estimates for off-site disposal are almost two million dollars lower than actual costs. TBG also claims that off-site disposal offers no greater protection of human health and the environment than the capping or in-situ fixation remedies, citing Health Risk Associates' comments contained in TBG's Appendix C. TBG asserts that off-site disposal would result in "a significantly greater overall risk" than capping or in-situ fixation, and that off-site disposal "cannot be considered cost-effective when compared to capping or fixation."

55. Response: EPA's response to TBG's cost estimates are found in Response 51. Capping and fixation are not equal to off-site disposal in overall protectiveness. The Health Risk Associate Report only discusses short-term effectiveness (e.g., the impacts during clean-up). Other errors and inconsistencies in the conclusions of that report are discussed in Response III.C.

56. Comment: Page 44, line 9 through 23, page 45, line 1-24, and page 46, lines 1 through 13. TBG's conclusion to its comments summarizes the detailed points made in the body of its comments, and "encourages EPA to take a second look at its proposed decision and the underlying documents....in light of [TBG's] comments."

56. Response: The comments made by TBG here offer no new points not addressed previously. EPA has carefully considered TBG's comments, and has revised its decision, where appropriate (e.g., EPA agrees that RCRA's liner requirement is not an ARAR for the site). Based on all

EPA's comments on institutional controls for the capping alternative also apply to the fixation alternative. See Response 39.

51. Comment: Page 42, lines 2 though 7. TBG disputes EPA's cost estimates for fixation, and states that fixation is cost-effective because it provides ample protection of human health and the environment at a lower cost than off-site disposal.

51. Response: EPA received from K/J/C on July 19, 1988 a letter providing its cost estiamte for remedial alternatives. The letter was received more than a month following the close of the comment period. K/J/C estimates contain errors and misapplied values. EPA's response is presented in Section III.C, Comments No. 1.29 and 1.30 and in Exhibit F to the Responsiveness Summary. EPA is confident that its estimates are accurate and will, therefore, continue to use the values presented in the FS. See Responses 20 and 21 on why public health protection is not the only measure of a remedy's effectiveness.

52. Comment: Page 42, lines 8 through 17. TBG comments on the costs, responsibilities for waste management, and lack of treatment technology for the excavation and off-site disposal alternative.

52. Response: EPA recognizes that off-site disposal would cost more than on-site fixation or capping, but has determined that off-site disposal is the appropriate solution for the site. One of the major benefits of off-site disposal is that the responsibility for the management of the wastes will shift from a location where hazardous waste disposal is not permitted to a location where institutional systems are in place and the long-term management goal is to maintain and monitor the integrity of the waste disposal unit. EPA did consider and evaluate treatment technologies that permanently destroy the PCBs (e.g., incineration and dechlorination) and would prefer these alternatives if they were implementable. As explained in the ROD, these technologies could not be implemented due to community objection and process control problems. EPA seriously considered fixation and capping, but neither of these alternatives provide a permanent solution for the site.

53. Comment: Page 42, lines 18 through 22, page 43, line 1 through 7. TBG states that off-site disposal should be considered the least favored alternative under CERCLA because practicable treatment technologies are available.

53. Response: TBG has misinterpreted the term practicable. It does not simply refer to whether the remedy would be viable (e.g., technically feasible) but instead encompasses how well a given remedy meets the nine criteria EPA considers in selecting a remedial alternative. As explained in the ROD, EPA has determined that for the MGM Brakes site a practicable treatment alternative is not available. Of the treatment alternatives considered, chemical dechlorination was ineffective in reducing PCB levels and incineration was adamantly opposed by the community. Fixation would require long-term groundwater and air monitoring as well as land use restrictions to ensure its continued long-term protection of public health. Land use

of the public comments received, and all of the information in the Administrative Record, off-site disposal remains the remedial alternative which best meets the requirements of both CERCLA and SARA, for the MGM Brakes site.

III.B DR. JAMES L. BYARD'S REPORT, "COMMENTS ON EPA ENDANGERMENT ASSESSMENT AT THE MGM BRAKES SITE," PRESENTED AS APPENDIX A TO TBG'S COMMENTS.

1. Comment: Dr. Byard presents introductory remarks regarding the site, including assertions that the average soil concentration of PCBs is 200 ppm, a reasonable worst-case measurement of PCBs in air is 187 ng/m^3, and that the nearest house is approximately 200 feet from the site.

1. Response: Nowhere does Dr. Byard establish how the average concentration was derived or why the conditions during one 24 hour sampling day may represent a worst case measurement. The difficulties in calculating an average concentration are discussed in Response 1.7, Section III.C. The nearest home is less than 100 feet from the air monitoring station recording the highest value.

2. Comment: Dr. Byard states that "actual valid analytical data" are available to assess airborne PCB risks and that use of this data should be preferred over modeling. Dr. Byard states that the airborne concentrations demonstrated by the Acurex study are representative of "reasonable worst case conditions", and are 42 times lower than the concentration predicted by the OHEA document.

2. Response: Nowhere in his report does Dr. Byard present criteria or conditions that would validate data collection by Acurex for use in defining risks. EPA has explained, in Reponse to TBG's Comment No. 13, (Section III.A) why the data are not usable for evaluation of risk. Assessment of risks by Dr. Byard using the data is, therefore, inappropriate, and the results of his analysis are not considered valid.

The Acurex data on airborne PCB concentrations at the site represent only a single 24-hour sampling event. They are therefore not appropriate for either risk estimation from long-term exposures or estimation of worst case exposures.

Many factors affect airborne chemical exposures and most vary considerably with both meteorological conditions and the season. Acurex, TBG's own consultant, discussed some of these factors in letters to K/J/C (Dec. 23, 1987; Jan. 20, 1988):

- "During the 24-hour sampling period the wind changed directions many times." A worst-case exposure scenario for dust would have a constant wind of sufficient velocity to generate appreciable dust at the closest site residence.
- "The weather conditions during the time of testing were typical of that particular season." Estimates of risk from long-term exposures should be based on yearly, not seasonal, exposure conditions.
- "The wind may tend to have a diluting effect on the ambient concentrations....." The variabale winds on the single day

of sampling can be expected to have diluted airborne concentrations. Dr. Byard does not mention winds nor the dilution affects of winds, therefore his comparison of Acurex data to the OHEA calculations is invalid.

3. Comment: EPA used a soil-dermal uptake factor of 2% in the first FS, based on recent data for dioxin. The OHEA document uses a factor of 5%. EPA should update the advisory document with the 2% value. The dermal absorption rate would then be reduced by a factor of 2.5.

3. Response: See Response to TBG's comment Number 17, Section III.A.

4. Comment: The Draft FS is faulty because it assumes that children will ingest soil on a site that is fenced. Dr. Byard also states that EPA's soil ingestion factor for children between the ages of 1-5 seems highly improbable especially in light of a recent report that 0.1 grams/day has been measured for young children.

4. Response: See Response 17, Section III.A.

5. Comment: Dr. Byard recalculates a "no-action" advisory level using his assumptions as compared to the OHEA document. Using a 42-fold decrease in the inhalation exposure and 0.1 grams/day ingestion rate, the 10^{-6} advisory level is raised from 0.6 ppm PCBs to 4 ppm.

5. Response: Given the extremely high levels of PCBs at the site (4,500 ppm is the highest level detected, and many other samples were in the 1,000 ppm range) and the fact that EPA is requiring clean-up to 10 ppm, a change in the advisory level from 0.6 ppm to 4 ppm is irrelevant. Even assuming all of Dr. Byard's assumptions are valid, the site would still present an unacceptble on-site risk.

6 Comment: Dr. Byard questions EPA's use of the linearized multi-stage extrapolation model, stating that it has been "inappropriately applied to PCB carcinogenesis." He suggests that a log-probit or safety factor approach is a more appropriate way to estimate a non-toxic dose of PCBs for humans.

6. Response: The risk assessment reflects current EPA policy regarding estimation of potential cancer risks from chemicals at Superfund sites. This policy directs the risk assessor to use EPA-approved cancer potency factors from IRIS (Integrated Risk Information Service) when available, or from individual Program Offices when IRIS values are not available. Since there is currently no cancer potency factor for PCBs within IRIS, use of the PCB cancer potency factor derived by the Carcinogen Assessment Group (CAG), as was done in this risk assessment, was appropriate. Regardless of Dr. Byard's own interpretation of the scientific data on PCB carcinogenesis, EPA policy is clear on the use of established cancer potency factors. See also Response 18, Section III.A, on Dr. Byard's inappropriate use of the safety factor approach.

7. Comment: Dr. Byard states that assuming 1 ppm PCBs in 10 kg of adipose per person, the total body burden would be 10,000,000 ng.

This level suggests a daily background dose on the order of several thousand nanograms. He goes on to state that most of the industrialized world has been exposed to these levels with no toxic effects. In fact, accidental exposures indicate that body burdens several orders of magnitude higher are required before toxicity is observed.

7. Response: Dr. Byard's suggested use of limited epidemiological data for predicting toxic levels of PCBs is inappropriate. EPA has a clearly established policy on estimating risks from carcinogens such as PCBs. See also, Responses 11 and 18, Section III.A.

III.C COMMENTS MADE BY KENNEDY/JENKS/CHILTON ON THE DRAFT FEASIBILITY STUDY, MGM BRAKES SITE, CONTAINED IN APPENDIX B TO TBG'S COMMENTS.

III.C.1 K/J/C's COMMENTS ON THE DRAFT FEASIBILITY STUDY

1.1 Comment: K/J/C states that the discharge of wastewater containing ethylene glycol ended in August of 1981 and not in 1982 as referenced in the Draft FS.

1.1 Response: EPA agrees that the discharge ceased in 1981 and not 1982 as stated in the Draft FS.

1.2 Comment: K/J/C states that the Draft FS should explain that TCE and vinyl chloride, detected in off-site monitoring wells, are not associated with the PCB contamination. VOCs associated with PCBs were detected in one on-site well and they emphasize that only off-site wells contain non-PCB-related VOCs.

1.2 Response: EPA agrees with K/J/C's comment, which does not contradict the more general statements in the Draft FS.

1.3 Comment: K/J/C states that the highest PCB concentration detected from on-site soil samples is 4,500 mg/kg and not the 4,800 mg/kg reported in the Draft FS.

1.3 Response: EPA agrees that the highest soil concentration detected to date is 4,500 mg/kg, not 4,800 mg/kg. The correct value was reported on page 1-8 of the Draft FS.

1.4 Comment: K/J/C states that the dates reported in the Draft FS concerning the K/J/C winter sampling effort should be changed from 1987-1988 to 1986-1987. In addition, they prefer their own name, K/J/C, to be reported in the Draft FS as the collector of the samples, rather than MGM Brakes. They state that PCBs were detected in only two of twelve samples and at levels between the detection limit and 3.5 ppm.

1.4 Response: The winter sampling effort by K/J/C occurred the winter of 1986-1987. The FS accurately stated that low levels were detected.

1.5 Comment: K/J/C states that the draft FS reported a PCB concentration of 3 ppb from monitoring well B-4 in 1982. K/J/C explains that PCBs were not detected for this well in 1982 from either K/J/C's database or in Table D-1 of the Draft FS.

1.5 Response: The 3 ppb value was taken from page 5-2 of the first Draft FS (EPA, 1986a). A letter from Anatec Laboratories to Vath of NCRWQCB (Anderson, 1982) reported a value of 2.5 mg/L from B-4. In TBG's comments on the first Draft FS (TBG 1986, Appendix C, Comment No. 13), TBG notes that the well was "not properly constructed for monitoring purposes" and that PCB results from B-4 should not be considered representative of groundwater conditions.

Although not specifically designed for long term monitoring, the results can be used qualitatively and are similar to results obtained from the monitoring well also located in an area of soil contamination.

1.6 Comment: K/J/C states that it is inappropriate to perform sampling and modeling of VOCs as part of the MGM Brakes FS, and that VOCs should not be addressed in the Draft FS. No VOCs have been detected on the MGM Brakes site (except those associated with PCBs) and no source of VOCs has been identified at the site. In any event, the need for quarterly groundwater sampling and groundwater modeling has not been established and may not be required for what appears to be a very localized groundwater condition.

1.6 Response: TCE has been detected in wells that are immediately downgradient of the site and in a pattern similar to chlorobenzenes, which are a site contaminant. TCE has been used in a vapor degreaser unit at the MGM fabrication plant from 1964 to the present (Shanks, 1987). The only identified user of TCE in the vicinity of the site is MGM Brakes. Thus, the available data and information justify the quarterly groundwater monitoring and groundwater modeling to further define the extent of the problem.

1.7 Comment: K/J/C states that the MGM Brakes soils database does not show surface soil levels in excess of 4,500 mg/kg and that the 4,500 mg/kg sample reported in the draft FS in Table A-2 referred to a subsurface soil sample, not a surface soil sample. In addition, they state that it would be more appropriate to reference the average concentrations rather than the highest ones.

1.7 Response: Although Table A-2 was labeled "Subsurface Soil Sampling Results," it shows results of soil boring samples collected from the surface to depths of 29 feet. The sample with 4,500 ppm PCBs was collected at the 0.5 foot interval of a deep boring. This makes the result a surface sample. Calculation of an average soil concentration would require multiplying concentration by volume of soil at the specific concentrations. Based on the extreme heterogeneity of sample results, it would be inappropriate to perform this type of calculation in describing the site conditions and the risks thereby posed.

1.8 Comment: K/J/C states that Acurex air data cannot be disregarded due to invalid recovery efficiency standards or lack of representative site conditions. They report that a rerun of the recovery efficiency standard check was performed and the results were acceptable. They explain that the conditions at the time of the 24-hour sampling event (a hot day with moderate winds) were representative of site conditions on a typical summer day. They emphasize that the lack of a background sample makes the data obtained conservative because the entire amount of PCBs determined is assumed to be from the site itself rather than background. EPA had an opportunity to comment during the sampling plan review concerning any objections to the sampling procedure.

1.8 Response: See Responses 13, 14, and 15 in Section III.A.

1.9 Comment: K/J/C believes there is no significant risk associated with exposure to volatilized PCBs at the MGM Brakes site. This conclusion is based on the Health Risk Associates (1988) risk assessment report, which reported PCB levels found in the air near the MGM Brakes site boundary as lower than those normally found in homes and offices.

1.9 Response: See Response 15, Section III.A.

1.10 Comment: With regard to the clay cap with slurry wall alternative, (citing Draft FS, p. 4-5, paragraph 3), K/J/C states that "reasonable use of the site is not limited by the presence of the fixed monolith" because "construction in the vicinity of the site is typically 'slab on grade' construction." K/J/C also states that above-ground structures on the monolith would provide further protection to the site.

1.10 Response: The portion of the Draft FS cited by K/J/C discusses the clay cap alternative, not fixation. Thus, the comment is unrelated to the cited material. Furthermore, neither TBG nor K/J/C has presented any information to support K/J/C's claim regarding what type of construction is "typical" in the area. Land use restrictions would have to limit all possible uses which could disrupt the cap, not just those that are "typical." Also, if the area changes from an agricultural/light industrial use to a residential use, as the community anticipates, "typical" construction methods may also change. Finally, even with "slab on grade" construction, restrictions such as limitations on the installation, access to, and maintenance of utilities would be required. Thus, any additional protection provided by construction of a building over the cap would not eliminate the need for long-term land use restrictions, as well as institutional mechanisms to ensure that those restrictions are enforced.

1.11 Comment: K/J/C objects to language in the Draft FS which states that the inability of the clay cap without slurry wall alternative to control horizontal movement of PCBs in groundwater is a disadvantage. K/J/C states that because control of horizontal migration is "not an appropriate remedial objective for this site, it should not be used as a criteria for selection of remedial alternatives".

1.11 Response: EPA recognized in the FS that horizontal migration of PCBs with or without a clay cap will be extremely slow but will occur if uncontrolled. When compared to the slurry wall alternative, the clay cap without slurry wall would be less effective in controlling horizontal movement. However, EPA specifically stated on p. 4-8, paragraph 1 that the primary objectives of a containment would be minimize to infiltration and prevent exposure from surface soils, not to prevent horizontal mobility. Therefore, the slurry wall alternative was not considered further as a potential alternative for the site because it would not meet the stated objectives any better than a cap without a slurry wall. EPA agrees that control of horizontal mobility of PCBs is not a primary remedial objective for the site and should not be used as a criterium for selection of a remedial alternative.

1.12 Comment: K/J/C states that the results of the TCLP tests on fixed soil, reported on page 4-16 of the Draft FS, should be <0.1 μg/L instead of 1.0 μg/L for the Qualtec Fixative column.

1.12 Response: According to the K/J/C document "Report on Fixation Bench Scale Study for the MGM Brakes Site (K/J/C, 3/15/88)," the Qualtec TCLP value should read <1.0 μg/L, not <0.1 μg/L as stated by K/J/C above, nor 1.0 μg/L as stated in the Draft FS.

1.13 Comment: K/J/C comments on the statement in the Draft FS (p. 4-16, paragraph 1) that information is not available to evaluate the extent to which fixation reduces extractability of PCBs from fixed soil in comparison to untreated soil. K/J/C cites previously submitted data and recently obtained data on extraction of PCBs from untreated soil using the TCLP test (presented as Attachment B to its comments). K/J/C compares TCLP leach test results for treated soil with untreated soil from separate soil batches and claims a 90 percent reduction in leachability between treated and untreated soils. K/J/C describes additional tests it is performing on a new fixative agent, and states that the results are expected to be available in mid-July and will be forwarded to EPA immediately.

K/J/C also notes changes EPA has proposed to the TCLP test. K/J/C states, "[p]resent TCLP procedure requires samples to be crushed to a size of 1 cm or finer before the leaching test. This requirement destroys the ability of the primary mechanism of fixation to retard the mobility of PCBs, and thereby enhances the leachability of the fixed soil samples." Therefore, K/J/C describes EPA's present test methods as conservative.

1.13 Response: It is not clear how K/J/C derived its 90 percent reduction in TCLP leachability from the two data sets it cited. No justification for the value is given in K/J/C's comments. Until a more appropriate leach procedure is approved for use on fixation samples, results of the TCLP test will be used to evaluate fixation effectiveness. EPA has not yet received (by late-August) the data K/J/C stated would be available by mid-July.

1.14 Comment: In response to a statement in the Draft FS (p. 4-16, paragraph 2) that PCBs were neither chemically bound nor altered by soil fixative agents, K/J/C suggests that new fixative agents may exist that chemically alter PCBs. K/J/C bases this claim on information received during telephone conversations with two purveyors of fixation technology. K/J/C stated that it would submit to EPA new data on fixation by mid-July, and requested that EPA review the results prior to making its decision on site remediation.

1.14 Response: K/J/C never provided EPA with data indicating that the new fixative agents could alter PCBs. EPA cannot comment on data that are not available for review. All available data indicate that PCBs are not chemically altered by fixative agents. EPA cannot wait any longer to make a decision, awaiting potentially new data. Site remediation technologies are rapidly changing in the hazardous waste treatment area, but the need to make decisions necessitates using the best information available at the time of decision. This need is particularly critical here where the problem has gone unremediated for over six years after it was discovered. EPA has received public comments which urge timely action by EPA and/or TBG to begin implementing a remedy. (See Section I.B)

1.15 Comment: K/J/C paraphrases a sentence in paragraph 2, page 4-18, stating "[t]his paragraph states that there is no evidence to date indicating that fixed soils will withstand weathering and will show no evidence of leaching." K/J/C introduces a report on the immobilization of chemicals and integrity of monoliths developed by a Dr. Leslie Dole as Attachment C of K/J/C's comments.

Dr. Dole reports that the effective diffusion coefficients for a large monolith at the Pepper's Steel and Alloys Superfund site were measured to be less than 10^{-13} cm^2/second and that more than 99.9% of the PCBs will remain in the monolith after 1200 years.

Dr. Dole also makes the following four comments with regards to the ability of pozzolonic materials to withstand weathering: (1) "structure made from similar high calcium and silica pozzolanic formulations, Cyprioit, Greek, and Roman aqueducts, harbors and fortifications have endured immersion in highly agressive environments for as long as 6,000 years;" (2) "monoliths below grade in the benign silty/clay soils and high carbonate groundwater will persist for many millenia without weathering;" (3) "natural cements and pozzolans have been formed by volcanic action and their hydrated minerals have persisted over 250 million years;" and (4) "cement-based formulas are considered the only waste form media for the long-term isolation of long-lived transuranic wastes and the sealing of high waste repositories by the U.S. Department of Energy."

1.15 Response: K/J/C has mischaracterized the statement in paragraph 2, page 4-18 of the Draft FS. What is actually stated in the Draft FS is "[e]vidence to date indicates the blocks withstand weathering and show no evidence of leaching. However, the long-term durability is still unknown (Stinson, 1987)." The statement was referring specifically to a particular company's fixed blocks which will be tested in an EPA demonstration project. EPA does not contest any of the statements made in Dr. Dole's report. EPA recognizes that the rate of leaching from a fixed monolith is likely to be extremely low and that such a monolith is likely to be durable. However, current fixation tests are being performed on materials classfied by vendors as proprietary and the long-term durability claims for these materials are largely theoretical. Therefore, long-term groundwater monitoring would be required to verify this prediction. Furthermore, it is inappropriate to compare natural minerals formed under high temperatures and the pressures of volcanic activity to the fixative agents being proposed. It is also inappropriate to compare fixation of soils at the MGM Brakes site to DOE's immobilization of radioactive material. The monoliths created by DOE will exist in remote disposal repositories far from residental areas. (See also Response 48, Section III.A.)

More importantly, EPA has stated throughout the FS and ROD that its primary remedial objectives are not to prevent PCBs from leaching into the groundwater but are instead to prevent exposure caused by air emmisions, direct contact, and ingestion. No actual data exist on the toxicity of the fixed monoliths and the only available data on air emissions indicate that there is still a potential problem even after the contaminated soil has been fixed. A fixed monolith does not address the primary threats at the site in such a way that long-term monitoring and deed restrictions would not be required to ensure protection of human health and the environment.

1.16 Comment: K/J/C questions costs for in situ fixation ($2,600,000) and on-site fixation ($6,000,000) presented on page 4-18, paragraph 5 of the Draft FS. These values differ from those presented in Section 5.0 of the Draft FS.

1.16 Response: The values presented on p. 4-18 are based on remediation of a volume of 16,000 cubic yards of contaminated soil. Costs shown in Table 5-1 of the Draft FS reflect 13,500 cubic yards of contaminated soil. The cost values in Chapter 4 are part of the initial screening and are recognized to be less accurate than those in Chapter 5. See also, Response to K/J/C Comment 1.17.

1.17 Comment: K/J/C questions the statement that 16,000 cubic yards of soil are to be remediated as is stated on page 4-41, paragraph 2 of the Draft FS, given that Section 1.3.2 presents an estimate of 13,500 cubic yards.

1.17 Response: A volume of 16,000 cubic yards was used in the first Draft FS to assess remedial alternatives. As stated in the FS in Section 1.3.2, this value was recalculated to about 13,500 cubic yards. The 16,000 cubic yards presented on page 4-41 was used for initial screening purposes and was amended to reflect the new value for the detailed cost comparisons in Chapter 5 of the FS. Use of the higher volume in the initial screening of alternatives did not in any way affect which alternatives were selected for the detailed analysis.

1.18 Comment: EPA proposes to discharge treated wastewater into a drainage ditch that flows into Icaria Creek or to a publicly owned treatment works or other authorized facility. K/J/C comments that the discharge into the drainage ditch "would probably require an approval from the Regional Water Quality Control Board (RWQCB)." K/J/C also states that it discussed disposal options for PCB containing wastewater with Mr. Dennis Salisbury of RWQCB and he told them that no discharge to the Russian River drainage basin is allowed during summer months nor at any time when the flow capacity of the Russian River Basin cannot maintain 100 fold dilution of the flow of the water discharge. K/J/C also claims that "the discharge requires a use permit from the planning agency for the area and assurance of [sic] the use permit must comply with the California Environmental Quality Act (CEQA)." K/J/C attaches a letter from Mr. Salisbury in support of its statement (K/J/C Attachment D). K/J/C also states that "[b]ecause site remediation is likely to be performed in summer, surface water discharge . . . would not be possible."

K/J/C also states that they have "learned" that the POTWs near Cloverdale "are unlikely" to accept any wastewater from the City of Cloverdale, and that they have "been informed that the City of Cloverdale is reluctant to accept wastewater containing any detectable PCBs into their sewage system." K/J/C also states that no Class II facility that will accept wastewater containing PCBs has been identified in California, and that disposal of wastewater may require transportation and disposal of dewatering water to a Class I facility. K/J/C states that "[t]he problem associated with disposal of dewatering water significantly affect[s] the implementability of any alternative requiring deep excavation at the site [sic]."

1.18 Response: The drainage ditch to which treated wastewater may be discharged runs through the site. Therefore any discharge would occur on the site or directly adjacent to it. EPA is therefore required to meet the substantive elements of any identified ARARs, but not procedural requirements such as obtaining a permit. Thus, K/J/C's statement that the RWQCB's approval "would probably" be required, is incorrect, as is the assertion that a use permit and accompanying assurances would be needed. Nor does Mr. Salisbury's letter (Attachment D) ever mention CEQA. EPA intends to fully comply with the RWQCB's substantive discharge requirements if any discharges are made to the ditch.

K/J/C is incorrect in assuming that the remedial action will take place in the summer. On the contrary, due to the lower temperatures and higher moisture content of the soil, it is preferable to perform the action in the winter in order to reduce the amount of volatilization and dust. Moreover, K/J/C does not say how they "learned" what POTWs in the area are "likely" to do, nor what source informed them of the City's intentions regarding wastewater. In any event, the wastewater to be discharged would not contain detectable levels of PCB's; therefore, the intentions attributed to the City regarding such contaminated wastewater are irrelevant. As stated in the Draft FS (p. 5-8), if a POTW is used, any discharge would be treated to meet all of the requirements of that facility. K/J/C has not provided any reason to think that disposal at a Class I facility will be necessary.

Finally, EPA has contacted the City of Cloverdale and adjacent communities and found that they are willing to accept treated groundwater from the site. (See Exhibit C for Records of Communication regarding disposal of wastewater.) EPA's response to the RWQCB letter is present in Section II.B of this Responsiveness Summary.

1.19 Comment: K/J/C notes that 24-hour-per-day operation of an on-site thermal treatment unit or fixation technologies would disturb local residents.

1.19 Response: The 24-hour operation was used only as a means of better comparing the total time of implementation and costs of the various alternatives. Any remedial alternative implemented would employ measures designed to minimize noise impacts to local residents.

1.20 Comment: K/J/C comments on the necessity of long-term maintenance, groundwater monitoring, and property deed restrictions for the fixation alternatives. K/J/C reiterates statements from Comments 1.14 and 1.15 on the durability of fixed monoliths and the possibility of new fixative agents chemically altering PCBs. They state that fixation may require only initial testing to verify that fixation has been accomplished and periodic inspections to assure proper site use.

1.20 Response: EPA's Responses to comments No. 1.14 and 1.15 apply equally to this comment. EPA does not agree with K/J/C's statement that fixation may only require initial verification testing. It is the long-term effectiveness of this remedy that is in question and, therefore, testing (e.g., monitoring) would need to occur indefinitely. EPA agrees with K/J/C that periodic inspections would be needed to enforce the land use restrictions imposed on the site. These, too, would have to occur indefinitely. The need for restrictions and monitoring is supported by the California Department of Water Resources (see Section II.A of this Responsiveness Summary).

1.21 Comment: K/J/C applies its comments No. 1.15 and 1.20 to the statement in the FS regarding the "unproven long-term durability of the fixative agent/soil matrix" from page 5-27, paragraph 4.

1.21 Response: K/J/C has misquoted the statement on page 5-27, paragraph 4. The direct quote is: "Pilot studies indicate the short-term durability of the fixed material appears to be good as evidenced by no signs of weathering or leaching, but the long-term durability is still unproven". As stated in Response to K/J/C's comment 1-15, these tests are being performed on proprietary materials. The vendors have not stated that the materials are identical to materials currently being used as pozzolonic agents. EPA is concerned about the lack of a database that shows that the proprietary material will remain durable.

1.22 Comment: K/J/C comments on soil volume increases due to fixation. The Draft FS reported a volume increase of 25-30 percent (page 28, paragraph 2). K/J/C presents data to support a claim that volume would be increased 2 to 25 percent, with the value closer to 2 than 25 percent. K/J/C compares fixed soil volume increases of MGM Brakes site soil with increases of soil from other sites. K/J/C also states that sufficient area is available on site to accept the additional volume, even if it is a 25 percent increase.

1.22 Response: K/J/C's comparison of volume increase for MGM Brakes soil with fixed soil from other sites is inappropriate without considering site-specific conditions. The degree by which soil volume will increase is dependent on a number of factors, including soil type, density, grain or soil particle size and form, the amount of additive (e.g., fly ash) incorporated, and the fixative agent itself. Soil type at the Pepper's Steel site, where K/J/C claims a 2 percent volume increase, is a loose sandy loam. Naturally, fixing a soil with large grain size and large void spaces would result in a low volume increase. MGM Brakes soils are a dense, fine-particle size, silt/clay, with extremely small space between particles. Volume increase for this type of soil on a per weight basis would be expected to be much greater than for that of Pepper's Steel's sandy soil. In fact, the soil volume increase for a clayey soil has been shown to be 18 to 20 percent (see Exhibit G). Therefore, K/J/C's statement that MGM Brakes soil volume increase would be closer to 2 percent is invalid. EPA's estimate of 25-30 percent may be higher than the 18-20 percent achieved for a clay soil, but is more realistic than K/J/C's estimate.

1.23 Comment: K/J/C questions statements in the Draft FS that because fixation does not destroy PCBs, but makes them more suitable for long-term storage, fixation is not a permanent solution for the site (page 5-28, paragraph 2). K/J/C argues that fixation permanently and significantly reduces mobility, and is therefore a "permanent remedy". K/J/C again references unavailable data on the potential ability of fixative agents to destroy PCBs.

1.23 Response: This comment is fully responded to above in EPA's Response to TBG's Comments 22, 24, and 45, and to K/J/C's Comment 1.15.

1.24 Comment: K/J/C comments on the Draft FS's statement that in situ fixation has not been demonstrated on a full scale basis. K/J/C states that in situ fixation consists of the use of a fixative agent and an in situ mixing technology, and that the use of fixative agents has been successfully demonstrated in full scale applications to PCB-containing soils. K/J/C notes that fixation was accepted by EPA to remediate the Pepper's Steel Superfund site in Florida. K/J/C believe that the fixative agents have been well developed to treat soils with PCBs, stating that although the in situ mixing technique has not been used to remedy soil with chemical wastes, this mixing technique has been widely used in Japan and recently has been applied in Michigan for construction of dam foundations and other foundations. K/J/C states that it considers mixing appropriate for the site even though, at present, the mixing technology has not been completely demonstrated in clayey soils. K/J/C admits that a possible concern with the use of in situ fixation with clayey soil is the possibility that some soil may not be completely mixed with the fixative agent. K/J/C asserts that this should not be a significant concern, as any untreated soil would be encapsulated within the fixed mass and would, therefore, not result in any potential for exposure or migration.

1.24 Response: The remedial action at Pepper's Steel employs on-site excavation and fixation. It is therefore inappropriate for K/J/C to reference this site in its discussion of in situ fixation. Nevertheless, EPA agrees that more data are available on the fixative agents than are available regarding the in situ mixing technology. However, because only one pilot scale demonstration of the in situ technology has occurred, concern over the ability to completely mix the clayey soils at the site is justified, especially given the difficulties with the KPEG lab tests. EPA is also concerned about the ability to verify complete mixing or even complete encapsulation of unmixed soils as suggested by K/J/C. If unmixed soils were completely encapsulated, EPA would still be concerned that any disturbance of the monolith would cause the PCBs to be released into the environment. Therefore, as compared to on-site fixation where soils are excavated and then mixed, there is more uncertainty associated with in situ fixation.

1.25 Comment: K/J/C repeats its comments on bulk volume increases after fixation.

1.25 Response: See Reponse to K/J/C's comment 1.22.

1.26 Comment: K/J/C requests an addition to a statement in the Draft FS (pg. 5-31, paragraph 3) regarding immobilization of PCBs under a cap. K/J/C requests that the statement be expanded to address surface water separate from groundwater and that it be noted that the PCBs in groundwater are considered relatively immobile. K/J/C also states that a cap would "effectively" eliminate volatilization from below the cap.

1.26 Response: EPA agrees that the clay cap, if properly installed and maintained, would prevent surface water releases of PCBs. The cap would reduce vertical movement of PCBs in the groundwater zone, but not horizontal movement. EPA agrees that PCBs in groundwater are relatively immobile. A clay cap, constructed to RCRA requirements and properly maintained, would essentially eliminate PCB volatilization from the cap, but not along the perimeter of the cap.

1.27 Comment: K/J/C objects to statements in the FS on page 5-41, paragraph 3, and page 5-46, paragraph 1 that call fixation a containment technology. Instead, they state that it should be regarded as a treatment process because it "is able to permanently immobilize and may be able to chemically alter [sic] PCBs."

1.27 Response: EPA agrees that fixation is a treatment process and states this on page 5-41, paragraph 3 of the FS. The FS states that "since the treatment process fixes but does not destroy the waste it may be considered equivalent to containment." As stated in earlier responses, no evidence is available to demonstrate that the PCBs are chemically altered. See Response to Comment 24, Section III.A, and 1.14 and 1.15 of this Section. Therefore, fixation is a physical treatment process whereby wastes do not chemically interact with the fixative agents but are mechanically locked within the solidified matrix in a process also referred to as microencapsulation.

1.28 Comment: K/J/C questions EPA's concerns over the long-term integrity of the fixed materials and the need for long-term site control and deed restrictions. K/J/C cites the high durability of the fixed matrix and claims it would take "a determined individual" to break the monolith. Finally, K/J/C states that because PCBs are "strongly immobilized in the matrix," release into the environment from broken pieces of the monolith is unlikely.

1.28 Response: Because PCBs are neither destroyed nor altered and will remain in the monolith for an undetermined number of years, long term site control and deed restrictions would be required. Disturbance of the monolith and cover is possible through many ways: installation of buried utilities, pipe lines, foundation construction, roadway construction, etc. Only through adequate site control and deed restrictions could adequate assurance be obtained that such disturbances would not occur. EPA disagrees with K/J/C's claim that PCBs are strongly immobilized in the fixed matrix. Data provided to EPA by K/J/C on fixed site soils show PCBs not to be fixed to the matrix but, instead, capable of being leached and volatilized from fixed soil. See Response to Comments 24, Section III.A and 1.14 nd 1.15 of this Section. Disturbance of the monolith could directly result in release of PCBs to the environment.

1.29 &
1.30 Comment: K/J/C critizes EPA's cost estimates for remedial action alternatives, stating that EPA should have used the 1987 EPA Remedial Action Costing Procedures Manual, instead of the 1985

version of this manual that was used to develop cost estimates presented in the Draft FS. K/J/C presents its own cost estimates for some of the alternatives; these estimates are significantly higher than the estimates derived by EPA. K/J/Cs estimates as presented in their comment and the estimate they report from the Draft FS are as follows:

Remediation Alternative for Parcels 1 and 2 Implemented Jointly in 1988	Estimated Capital Cost in Millions of Dollars	
	K/J/C Estimate	K/J/C Cited Draft FS Estimate
Excavation and Off-Site Disposal	$7.1	$5.2
In Situ Fixation	$5.7	$3.6
On-Site Fixation	$6.0	$3.4
Capping	$2.6	$1.1

K/J/C states that "information on the details of those cost estimates will be forwarded to EPA for review," and claims that its estimates "are more realistic."

1.29 &
1.30 Response: The Draft FS value for the capping alternative should read $0.9 million and not the $1.1 million reported by K/J/C. Some of the present worth estimates reported in the Draft FS were in error. Revised Tables 5-1 and 5-2 are presented here with updated values. For the Action alternatives, none of the numerical revisions reflects a greater than 3 percent difference from the Draft FS values and the changes do not effect the comparison of alternatives.

None of the revisions effect capital cost estimates which are being questioned by K/J/C. The 1987 EPA Remedial Action Costing Procedures Manual is identical to the 1985 version. The only difference is that the 1985 version was a Final Draft and the 1987 document was issued as Final; only the cover pages are different. Therefore, it made no difference that the 1985 version was used. The differences between EPA capital cost estimates and K/J/C's capital cost estimates cannot be explained based on the use of either version. The documents present the philosophy for preparing estimates, not calculations and procedures. The documents do not account for the discrepancies between the estimates.

TABLE 5-1

COST SUMMARY

Alternative	Capital Cost	O&M Cost	Present Worth 1988	Equivalent Unit Cost
1-1 No Action Parcel 1	$0	$36,000	$69,100	$7/cy
1-2 No Action Parcel 2	$0	$5,500	$10,600	$4/cy
2-1 Off-site Disposal Parcel 1	$4,079,400	$0	$4,079,400	$383/cy
2-2 Off-site Disposal Parcel 2	$1,289,900	$0	$1,289,900	$451/cy
3-1 On-site Incineration Parcel 1	$6,089,500	$0	$6,089,500	$572/cy
3-2 On-site Incineration Parcel 2	$2,341,700	$0	$2,341,700	$819/cy
4-1 On-site Fixation Parcel 1	$2,694,300	$12,700	$2,718,700	$255/cy
4-2 On-site Fixation Parcel 2	$1,365,300	$5,500	$1,375,900	$481/cy
5-1 In Situ Fixation Parcel 1	$2,847,600	$12,700	$2,872,000	$270/cy
5-2 In Situ Fixation Parcel 2	$1,104,900	$5,500	$1,115,500	$390/cy
6-1 RCRA Cap Parcel 1	$756,900	$23,500	$802,000	$75/cy
6-2 RCRA Cap Parcel 2	$335,700	$5,500	$346,300	$121/cy

598.8:14

TABLE 5-2

COST COMPARISON

	Capital Cost	Present Worth	
Alternative Type	Implemented Jointly* (1988)	Implemented Jointly* (1988)	Implemented Separately** (1988, 1998)
No Action	$0	$79,700	$81,400
Off-site Disposal	$5,215,000	$5,369,300	$4,963,800
On-site Incineration	$7,662,700	$8,431,200	$7,695,000
On-site Fixation	$3,394,700	$4,094,600	$3,667,100
In Situ Fixation	$3,614,000	$3,987,500	$3,641,800
RCRA Cap	$946,800	$1,148,300	$1,044,500

*Parcel 1 and Parcel 2 Remediation implemented in 1988.

**Parcel 1 and Parcel 2 remediation to be implemented in 1988 and 1998, respectively.

598.8:15

Hazardous waste remediation cost estimates are prepared with a higher level of uncertainty than those for conventional construction work. Two reasons for this uncertainty are: (1) the lack of available costing data from actual site remediations; and (2) many of the innovative technologies either lack full scale development or have unsubstantiated cost estimates from vendors who can only project costs based on bench scale studies. Hazardous waste remediation cost estimates are, therefore, recognized to be less accurate. For the final presentation of candidate remedial alternatives, EPA guidance requires an accuracy of -30 to +50 percent. This level of accuracy is defined by the American Association of Cost Engineers to represent an "order-of-magnitude" accuracy. With the exception of the capping alternative, EPA's Draft FS cost estimates and K/J/C's estimates are within this range. Therefore, even if K/J/C's estimates had been used, EPA's selection of a remedial alternative would not have changed.

EPA has reviewed cost estimates presented in the Draft FS to determine where EPA's and K/J/C's cost estimates differ. EPA has reviewed several source documents and prepared a summary table comparing costs with the Draft FS estimates. The summary table and references are provided below. The table shows that the unit costs used by EPA in the Draft FS are similar to unit costs derived from other sources. The cost estimates provided in the Draft FS, therefore, represent a reasonably accurate estimate of probable construction costs, with K/J/C's estimates falling within the upper allowable end of EPA's estimation range.

Sources for Cost Comparison Table

Source 1: "Compendium of Costs of Remedial Technologies at Hazardous Waste Sites," October 1987. This document presents costs in 1982-1983 dollars. The costs shown have been escalated 10 percent to 1988 dollars based on ENR indices.

Source 2: "Means Site Work Cost Data, 1988," R.S. Means and San Francisco area based "LSI Current Construction Costs, 1988," Lee Saylor, Inc. The costs presented have been escalated 120 percent to account for Level D work and 185 percent to account for Level C work in accordance with "REM /FIT Cost Estimating Guide," CH2M Hill, 1985.

Source 3: "Evaluation of the MGM Brakes Site," Volume 1 of 3, September 1986, GCA Technology Division Inc. The 1986 costs presented have been escalated 3.6 percent to 1988 dollars based on ENR indices.

UNIT COST COMPARISONS
($)

Component	Unit of Measure	EPA Draft FS	Source 1	Source 2	Source 3[a]
Mobilization (As a Percentage of Total Capital Cost)	%	3-15%		5-10%	6-?%[b]
Clearing & Grubbing	AC	4,800		4,800	
Excavation	CY	7	1-5	7	4
Stockpiling/Handling	CY	6			
Backfill/Compaction	CY	3		3	
Import Fill	CY	12		12	
Sheeting/Shoring	SF	11		12	
Final Grading	SY	1	1-3	1	
Revegetation	SY	2	.25-2	2	.50
Resurfacing	SY	12		12	13
Fencing	LF	15		11	
Transport	CY	60-100[c]	2-104		63
Disposal	CY	100-155[c]	13-311		135-163
On-Site Fixation	CY	100[d]			
In Situ Fixation	CY	150[e]			
RCRA Cap	SF	4	4	5	3
Cap Components					
Topsoil	CY	15	17		
Sand	CY	19	20		
30 mil HDPE	SY	5	3-8	12	
Clay	CY	16	11	17	

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[a] Source 3 also used $75/CY for all earthwork related items.

[b] Upper limit could not be determined.

[c] Telephone quotes from Kettleman Hills (1987 and 1988).

[d] Telephone quote from CDM/Atlanta based on actual remediation costs at Pepper's Steel site in Atlanta in 1988. Vendor quotes from July 1987 range from $20-150/CY. Geocon quote in June 1988 was $100-110/CY. All quotes include system mobilization and demobilization.

[e] Telephone quote from IWT in February 1988. Geocon quotes $130-135/CY in June 1988. Geocon performed the first *in situ* deep soil mixing process in 1987 with IWT at the General Electric site in Hialeah, Florida under the SITE program. Both quotes include system mobilization and demobilization.

Although KJC stated that information on the details of their cost estimates would be forwarded to EPA, EPA did not receive the information until July 19, 1988, well after the close of the public comment period, and well after the unsubstantiated costs were presented. Even though the information was received after the public comment period, EPA has responded to KJC's letter in Exhibit F to this Responsiveness Summary. Nothing in K/J/C's July 19 letter changes EPA's decision of the selected remedy.

III.C.2 K/J/C Comments on EPA's May 1988 Fact Sheet Regarding the Draft FS, Contained in Appendix B to TBG's Comments

2.1 Comment: The maximum soil concentration should be 4,500 ppm, not 4,800 ppm as stated in the fact sheet.

2.1 Response: The EPA agrees that the statement was in error. See also, Response to K/J/C's Comment 1.3.

2.2 Comment: K/J/C asserts that production of dust during excavation of soils at the site is of significant concern because the majority of contaminated soils are within 5 feet of the ground surface and above the groundwater level. K/J/C states that the Health Risk Associate Report (K/J/C's Appendix C) finds that dust generation is expected to be the major exposure pathway for alternatives involving excavation.

2.2 Response: Dust suppression measures will be incorporated into remedial design; production of dust at levels that would produce an unacceptable risk will not be allowed during excavation. EPA will monitor site dust levels and enforce dust suppression measures during excavation. EPA could also limit excavation to the rainy season months when upper soils are saturated with water. In any case, exposure to dust can be minimized and prevented. Also, see the Response to the Health Risk Associate Report in Section III.E.

2.3 Comment: K/J/C again comments on EPA's statements that fixation does not destroy PCBs, it isolates them, and that long term maintenance, monitoring, and deed restrictions will be required. They refer back to comments 1.13, 1.14, 1.15 and 1.20.

2.3 Response: All data provided by K/J/C to EPA to date show that PCBs are not destroyed or altered in the fixed matrix. Long-term maintenance, monitoring, and deed restrictions are requirements at any waste disposal site and would be necessary at the MGM Brakes site for the fixation alternatives. See Responses to K/J/C's Comments 1.13, 1.14, 1.15 and 1.20.

2.4 Comment: K/J/C again comments on the ability of in situ fixation to thoroughly mix soils and refers to Comment 1.24.

2.4 Response: See Response to Comment 1.24.

2.5 Comment: K/J/C again comments on the necessity of restrictions for the capping and fixation alternatives, and refers to Comment 1.10.

2.5 Response: See Response to Comments 1.10 and 1.20 of this Section.

2.6 Comment: K/J/C again comments on: (1) the use of the term "permanent solution" with regards to fixation; and (2) statements in the Draft FS to the effect that *in situ* fixation has not been proven on a full scale base, and refers to Comments 1.13, 1.14, 1.15, and 1.20.

2.6 Response: See Responses to Comments 1.13, 1.14, 1.15, and 1.20.

III.C.3 FPL Qualtec Report on Fixation Presented as Attachment C to K/J/C'S Comments

1. Comment: The text presented as Attachment C contains a discussion of the long-term durability and leachability of pozzolonic materials.

1. Response: The text presented in Attachment C does not provide additional information that is not already discussed as part of the body of TBG's and K/J/C's comments. Therefore, no additional response is required.

III.C.4 Letter from the Regional Water Quality Control Board of the State of California Presented as Attachment D of K/J/C's Comments

1. Comment: The RWQCB's plan for the North Coast Basin prohibits discharges of toxic substances which would produce deleterious effects on aquatic biota or which would render aquatic biota undesirabale for human consumption. All waste discharges are prohibited from May 15 through September 30 and during other periods when the receiving stream flow is less than 100 times greater than the waste flow (i.e., a minimum 100:1 dilution). The Draft FS fails to recognize the Basin Plan as an ARAR. The Basin Plan also incorporates numerous existing statewide plans and policies, not the least of which is the Nondegradation Policy, Resolution 68-16.

   The elimination of direct discharge leaves only discharge to a POTW for treated groundwater. The POTW receiving the treated groundwater would be required to evaluate and establish discharge limits and regulate the discharge in a manner satisfactory to the Regional Board.

1. Response: The NCRWQCB's North Coastal Basin Plan is recognized as an ARAR for the site. However, and most important, nowhere in the Draft FS did EPA indicate that it would discharge waters toxic to aquatic life or human health. All extracted groundwater would be treated to remove suspended sediments, PCBs, and other organic pollutants to required discharge limits prior to any discharge to a receiving stream or a POTW. Although the possibility of direct discharge to the drainage ditch is remote, EPA will retain this option for the rainy season when rainfall causes flow in the ditch. Otherwise, discharge would be to a POTW. Naturally, EPA would meet all discharge criteria imposed by the receiving POTW when it discharges treated groundwater to the POTW. See also, Response to K/J/C's Comment 1.18.

III.D ESTIMATES OF ON-SITE CONCENTRATIONS OF PCBs IN AMBIENT AIR, MGM BRAKES CLOVERDALE, CALIFORNIA, PRESENTED IN APPENDIX C OF TBG's COMMENTS

1. Comment: K/J/C presents estimates of airborne dust contaminated with PCBs that could be generated during implementation of capping, in situ fixation, on site fixation, and excavation and removal. The estimates are used to calculate exposure and risk from remedial activities which are presented in the report, prepared by Health Risk Associates (see Section III.E). K/J/C also provides estimates of PCB volatilization and air concentrations for each alternative following site remediation.

1. Response: The assumptions that K/J/C has used in deriving its estimates of concentrations during excavation are either invalid or not supported by real data collected under field conditions.

K/J/C presents no supporting documentation or justification for its assumption that dust levels would be either 1 mg/m^3 or 5 mg/m^3 during site remediation. A 1 mg/m^3 dust level is equivalent to a dust storm in which visibility is significantly reduced. Although it is possible to measure a 1 mg/m^3 level within 10 feet of earth moving equipment in a situation where no dust control measures are employed, this concentration decreases rapidly beyond the source and dust levels 100 feet from the source are less than 0.5 mg/m^3. Exhibit E to this Responsiveness Summary presents actual dust levels measured at construction sites; these levels show K/J/C's assumptions to be wrong. This data shows that even without dust control measures, dust levels will be below the 1 mg/m^3 used by K/J/C in its assumptions. (An airborne particulate level of 5 mg/m^3 reflects conditions within a cement kiln during processing, a grain elevator during filling, or a mine shaft following blasting (i.e., enclosed spaces) and has no real bearing on dust levels produced at small, open air construction sites such as MGM Brakes.)

EPA is able to and will specify working conditions and acceptable atmospheric dust levels during remedial activities. Dust control measures for the site will be enforced and dust levels during remediation will be maintained within an acceptable risk range.

With regards to K/J/C's estimates of airborne PCBs following remediation, (Table 1 of K/J/C's comment), it is important to note that the estimates for each of the alternatives are similar (range of 0.028500 μg/m^3 for off-site disposal to 0.028550 μg/m^3 for capping). It is also important to note that K/J/C assumed a five-foot cap would be placed over fixed soils and over unfixed soils for the capping alternative. No on-site cap is required for off-site disposal. It is only through long-term maintenance of the cap that volatilization from PCBs left on site can be controlled. Should the cap be disturbed or fail, rate of volatilization will increase, and the on-site alternatives would lose their effectiveness when compared to EPA's preferred alternative. Data provided by K/J/C, therefore, demonstrate the need to maintain the cap, to enforce deed restrictions, and to perform long-term monitoring for the fixation and capping alternatives. (EPA also notes that a five-foot cap over PCB contaminated soils would physically restrict most productive uses of the site, other than open space.)

III.E CANCER RISK ESTIMATES FOR EXPOSURE TO PCBs DURING AND FOLLOWING ALTERNATIVE REMEDIATION ACTIONS AT THE MGM BRAKES SITE, HEALTH RISK ASSOCIATES, PRESENTED IN APPENDIX C OF TBG's COMMENTS

1. Comment: Using data generated by K/J/C, Health Risk Associates report cancer risk estimates developed to reflect risks during and after implementation of each of the remedial alternatives.

1. Response: Because of the inappropriately applied assumption used by K/J/C to generate atmospheric data, the results of the Health Risk Associates calculations are also incorrect. (See Response to Section III.D.) At best, K/J/C and Health Risk Associates have overstated the short-term risks of remediation. Also, it is important to note that the short-term risks associated with remediation estimated by K/J/C and Health Risk Associates are within the risk range of 10^{-5} to 10^{-7} that EPA considers acceptable. Therefore, there is not a significant difference in the risks of the alternatives as calculated by TBG's consultants and by EPA. With regards to the risks remaining after implementation, all alternatives fall within the range EPA considers acceptable. However, as discussed in Response to Section III.D., the low level of risk presented for fixation and capping relies on the long-term maintenance of a five-foot and air emission (therefore risk) would increase if the cap were disturbed.

Exhibits

Exhibit A - Record of Communication from Johanna Miller, EPA to File re: Telephone conversation with Karl Hauge, DWR

Exhibit B - Record of Communication from Johanna Miller, EPA to File re: Telephone conversation with Dennis Salisbury, RWQCB

Exhibit C - Contact Reports on Treated Groundwater Disposal During Site Remediation

Exhibit D - Memorandum from Gerry Hiatt on MGM Brakes Responsiveness Summary

Exhibit E - Memorandum on Atmospheric Dust Levels for Construction Activities

Exhibit F - Response to K/J/C's Cost Estimates for Site Remediation

Exhibit G - Record of Communication Regarding Soil Volume Increase for Fixation

Exhibit A - Record of Communication from Johanna Miller, EPA to
File re: Telephone conversation with Karl Hauge, DWR

RECORD OF COMMUNICATION

SUBJECT: Telephone conversation with Carl Hauge re: DWR's comments on the MGM BRAKES FS

FROM: JOHANNA MILLER J Miller

TO: FILE

I spoke with Carl on August 8, 1988 to discuss comments two and three of DWR's comments on the FS.

1. Vadose and groundwater monitoring around the site should occur for an indefinite amount of time regardless of when cleanup activities cease.

   Carl clarified this comment by stating that DWR's goal is for ground water to be returned to drinking water standards and that the ground water should be monitored adequately such that this determination could be made. I explained that EPA's ground water program would include a provision such as continued monitoring for at least one year after drinking water standards are first achieved to ensure that the performance levels are met consistantly. Carl agreed that such a program would meet the intent of DWR's comment.

2. Some mechanisms such as deed restrictions should be used to notify potential buyers of the site history.

   I explained that EPA selected a remedy that is protective of human health and the environment under any future site use and, therefore, deed restrictions would not be necessary for purposes of protection. Carl agreed that EPA was selecting the appropriate alternative and felt that perhaps EPA could recommend that local officials place a notice on the deed to notify future landowners.

Exhibit B - Record of Communication from Johanna Miller, EPA to
File re: Telephone conversation with Dennis
Salisbury, RWQCB

RECORD OF COMMUNICATION

SUBJECT: Telephone conversation with Dennis Salisbury on MGM BRAKES FS COMMENTS

FROM: JOHANNA MILLER J Mill

TO: File

I called Dennis Salisbury on July 14, 1988 to discuss two of the RWQCB's comments on the MGM Brakes FS.

1. The drainage ditch leading from the site constitutes a "navigable waterway" under EPA's definition and a "water of the State" under the California Water Code's definition. Therefore, the Regional Board Basin Plan is applicable to the drainage ditch.

   Dennis feels that the language of the Basin plan clearly requires clean up of the sediments in the drainage ditch to Non-detectable levels. I told him I would look at the plan and verifiy this.

2. If 10 ppm PCB are left on-site further remedial activities will be required and ground-water monitoring will be required indefinitely.

   Dennis was primarily concerned with the presence of solvents that would mobilize the PCBs and felt that the FS was not clear enough on what remedial activities would take place with respect to the solvents. I told him that we were planning future monitoring and treatment of ground water for solvents if neccesary and that eventually the ground water will meet ARARs with respect to the solvents but that on-site soils would remain with PCB concentrations below 10 ppm. In this case, Dennis felt that the Board would only want monitoring of ground water perhaps once every five years and would be willing to impose these restrictions on the company if EPA did not feel that they were neccessary.

cc: Marcia Preston (ORC)
John Wondolleck (CDM)

Exhibit C - Contact Reports on Treated Groundwater Disposal During Site Remediation

MEMORANDUM

TO: John Wondolleck

FROM: Sue A. Loyd

DATE: August 12, 1988

SUBJECT: MGM Brakes

DOCUMENT CONTROL NO: T598-C09-IO-CHJV-1

The following Sanitation Departments were contacted concerning costs and application criteria for accepting filtered and treated wastewater from the MGM Brakes Sites.

- Santa Rosa Sanitation Department
  Contact: Scott Steinbaugh
  (707) 576-5189
- Ukiah Sanitation Department
  Contact: Ted Gofer
  (707) 463-6286
- City of Cloverdale Wastewater Treatment Plant
  Contact: Mike Morris
  (707) 894-2521

Mr. Steinbaugh of the Santa Rosa Sanitation Department explained that they would accept the wastewater as a one time exception. However, certain criteria must be met including an in-house review of treatment data, as well as a $92.00/1000 gallon wastewater cost and a potential $2,000.00 connection fee.

Mr. Gofer of the Ukiah Sanitation Department stated that their treatment plant is for local use only. He explained that the City of Cloverdale is outside of the district's boundary. Therefore, the district could not accept any wastewater from the MGM Brakes Site.

According to Mike Morris, the City of Cloverdale Wastewater Treatment Plant, will accept treated and filtered wastewater from the MGM Brakes Site. However, the discharge must comply with City Ordinances No. 419-88 (see attachment). Mr. Morris explained that a sewer manhole exists in front of the MGM Brakes Casting building and that the manhole would be a convenient discharge location for MGM Brakes' wastewater. He also stated that due to the expansion of residential development in the area the sewer capacity will be increasing.

Costs for the discharage of 10,000 gallons (1282ft^3) of wastewater was quoted by Mr. Morris at less than $20.00. He based this estimate on a single family unit equivalent, which is charged $20.00 for the average discharge of 2000ft^3.

412.SL:10

CITY OF CLOVERDALE
ORDINANCE NO. 419-88

AN ORDINANCE OF THE CITY OF CLOVERDALE ENACTING SEWER USER FEES AND SEWER CONNECTION FEES.

The City Council of the City of Cloverdale does ordain as follows:

Section 1.

(A) A sewer user revenue program is hereby placed into effect and the rates shall be calculated by the "Flow Only" method as specified in the State Water Resources Control Board Revenue Program Guidelines for Wastewater Agencies.

(B) Sewer User Fees shall be set and calculated from following criteria:

1. Residential. A fixed charge of $11.55 for all Residential Units.

   The fee calculated shall be fixed for that year excluding any increase that might be implemented by the the City Council in consideration of the California Price Index (CPI) at the time of budget adoption.

2. Business, commercial, industrial. User Fee shall be based on prior year usage of water and charged at the rate of $1.15 per month per 100 cubic feet. A minimum charge equal to the charge set for a residential unit will be assessed against all commercial, business, and industrial users.

3. Schools. User Fee shall be based on average daily attendance (ADA) method. A rate of $69.00 per 100 ADA.

4. Undefined User Category. User Fee shall be based on flow, effluent characteristics and demand to the system.

Section 2.

Sewer User base rate shall be the same for all users inside the City limits and for users outside of the City limits excepting that an administrative surcharge of not more than 10% of the assessed charges for a comparable user within the City Limits may be placed upon users of the system of those premises which are outisde the City limits.

Section 3. Connection Fee

(A) A base connection of $2,000.00 is placed into effect for all users in the following categories:

1. Residential
2. Business, commercial, industrial that do not exceed the annual waste water flows of 12,000 cubic feet.

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(B) Connection Fees

Connection fees to users that exceed 12,000 cubic feet waste water flows - the fee shall be calculated on the demand placed upon the system of plant by that user.

Section 4. Annual Increases to Sewer User Fees.

1. The Published California Price Index (Bay Area) shall be presented to the City Council for review at the annual fiscal budget in July of each year, and any percentage increase as determined by City Council and adopted by the adopting ordinance of the annual City budget shall be incorporated by reference into this ordinance.
2. Any increase in user fees shall be adjusted in the user billing at the first full billing period following the adoption of the City of Cloverdale's annual fiscal budget.

Section 5.

All other ordinances pertaining to sewer user fees and sewer connection fees are hereby repealed.

Introduced in the City Council of the City of Cloverdale on the 1st day of February, 1988, and passed and adopted by the City Council on the 16th day of February , 1988, by the following Roll Call vote:

AYES in favor of: Pell, Teague, Mellon and Doble

NOES: None

ABSENT: Domenichelli

ABSTAIN: None

ATTESTED:

Pamela L. Tinnen
Deputy City Clerk

APPROVED:

J. L. Doble
John Doble, Mayor

ORDINANCE NO. 420-88

AN ORDINANCE ESTABLISHING REGULATIONS FOR THE INTERCEPTION, TREATMENT, AND DISPOSAL OF SEWAGE AND INDUSTRIAL WASTES AND THE CONTROL OF WASTEWATER, REQUIRING CHARGES TO BE MADE THEREFOR, AND FIXING PENALTIES FOR THE VIOLATION OF SAID REGULATIONS

BE IT ENACTED BY THE CITY COUNCIL OF THE CITY OF CLOVERDALE:

TITLE I
GENERAL

Section 1
Short Title

This Ordinance shall be known as the "WASTEWATER CONTROL ORDINANCE".

Section 2
Purpose

Sewage disposal facilities have been constructed for the interception, treatment, and disposal of sewage and industrial wastes originating within its boundaries.

The purpose of this Ordinance is to regulate the interception of sewage and industrial wastes and to control wastewater to provide the maximum public benefit of the sewage disposal facilities of the City of Cloverdale. The regulations shall include provisions for source control in order to monitor and control quantity, quality, and flow of sewage and industrial waste. The regulations shall require charges for use of sewage disposal facilities of the City of Cloverdale which are designed to achieve an equitable recovery of the capital reserve fund and operating costs of such facilities. The regulations shall include provisions for enforcement and penalties for violations.

Section 3
Definitions

For the purposes of this Ordinance, unless the context specifically indicates otherwise, the meaning of terms used shall be as follows:

"City" - The City of Cloverdale, Sonoma County, California.

"Chemical Oxygen Demand, Filtered" - The amount of Chemical Oxygen Demand passing through a glass filter as measured in conformance with the Standard Method.

"Chlorine Demand" - The amount of chlorine required to produce a fee chlorine residual of 0.1 mg/l after a contact time of 15 Minutes as measured by the Iodometric Method on a sample at a temperature of 20° C in conformance with the Standard Method.

"Contamination" - An impairment of the quality of the waters of the State by waste to a degree which creates a hazard to the

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Public health through poisoning or through the spread of disease.

"Critical Industry" - A discharger whose wastewater requires special regulation or contains industrial wastes requiring source control or whose average wastewater strength cannot be established on a business classification basis.

"Discharger" - Any person who discharges or causes the discharge of wastewater to a City of Cloverdale sewer system.

"Director" - Director of Public Works and/or City Engineer of the Public Works Department of the of the City of Cloverdale or his designated representative.

"Sewage" - The water-borne wastes derived from human habitation and use of buildings for residential, business, institutional and industrial purposes.

"Nuisance" - A discharge of wastewater in violation of City regulations or orders, or which is or could be harmful to or unreasonably affect the sewage disposal facilities of the District, or which impairs or unreasonably affects the operation and maintenance of such facilities, or which violates quantity, quality, or flow standards adopted by the City, and all wastewater discharges which unreasonably affect the quality of the City treatment plant effluent in such a manner that receiving water quality requirements established by law cannot be met by the City.

"Person" - Any individual, partnership, firm, association, corporation, or public agency, including the State of California and the United States of America.

"Pollution" - An alteration of the quality of the waters of the State by waste to a degree which unreasonably affects (1) such waters for beneficial use or (2) facilities which serve such beneficial uses.

"Premises" - A parcel of real property, or portion thereof, including any improvements thereon, which is determined by the City to be a single unit for purposes of receiving, using, and paying for sewage disposal service. In making this determination, the City shall take into consideration such factors as whether the unit could reasonbly be subdivided, number and location of side sewers, and whether the unit is being used for a single activity and, if not, what is the principal activity for sewage disposal services, but in any case the City determination shall be final.

"Receiving Water Quality Requirements" - Requirements for the City treatment plant effluent established by law or by State or Federal regulatory agencies for the protection of receiving water quality. "Requirements" shall include effluent limitations, and waste discharge standards, requirements, limitations, or prohibitions which may be established or adopted from time to time by State or Federal laws or regulatory agencies.

"Sewage" - The water-borne wastes derived from human habitation and use of buildings for residential, business, institutional, and industrial purposes.

"Sewage Disposal Purposes" - The acquisition, construction, enlargement, operation, and maintenance of intercepting sewers, sewage treatment works, pumping plants, outfall sewers, and appurtenances by a special district.

"Sewage Disposal Facilities" - Includes intercepting sewers, sewage treatment works, pumping plants, outfall sewers, and appurtenances constructed, operated, and maintained by the City of Cloverdale and created for sewage disposal purposes.

"Side Sewer" - A sewer lateral conveying the wastewater of a discharger from a residence, building, or other structure to a community sewer, including direct connections to a ommunity sewer where permitted by the public agency.

"Waste" - Includes sewage and any and all other waste substances, liquid, .solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any prodcuing, manufacturing, or processing operation of whatever nature.

"Wastewater" - All sewage, industrial, and other wastes and waters, whether treated or untreated, discharged into or permitted to enter the sewer system for treatment in sewage disposal facilities of the City as used in this Ordinance, unless the context specifically indicates otherwise, "wastewater" shall mean sewage and industrial waste discharged to a City sewer by any person.

"Wastewater Capacity Fee" - "Connection Fee" - A charge to each new customer, or customer who increases his demand for capacity for wastewater treatment, which reasonably reflects the City's cost for providing wastewater treatment capacity.

"Wastewater Strength" - The quality of wastewater discharged as measured by its elements, including its constituents and characteristics.

"EPA" - Federal Environmental Protection Agency

"Federal Water Pollution Control Act of 1972" - Public Law 92-500, officially entitled the "Federal Water Pollution Control Act Amendments of 1972," and any amendments thereto, as well as guidelines, limitations, and standards promulgated by the Environmental Protection Agency pursuant to the Act.

"Garbage" - Solid wastes from the domestic and commercial preparation, cooking, and dispensing of food and from the handling, storage, and sale of food products.

"Incompatible Pollutant" - A component of industrial wastewater which interferes with, is not removed by, or is otherwise incompatible with the subregional sewage treatment and water reclamation plant or their processes.

"Industrial Waste" - The waterborne waste and wastewater from any production, manufacturing or processing operation of whatever nature including institutional and commercial operations where water is used for the removal of significant quantities of waste other than from human habitation or premises connected to the public sewers. Contents of chemical toilets, septic tanks, waste holding tanks and waste sumps shall be classed as industrial waste.

"Infiltration" - Water entering the sewerage system through the ground.

"Inflow" - Water entering a sewerage system from surface drainage and clean cooling water systems.

"Mgd" - Abbreviation for millions gallons per day.

"Natural Outlet" - Any outlet into a watercourse, ditch, pond, lake or other body or surface or ground water.

"Nonresidential User" - Users whose premises are primarily for commercial, or governmental or other nonresidential activity but excluding premises of industrial users. Incidental residential use is not precluded.

"O&M" - Operation and maintenance.

"Peak Wet Weather Flow (PWWF)" - Peak rate of flow occurring during or from the effects of precipitation.

"Person" - Any individual, firm, company, association, society, partnership, corporation, organization, group or public agency.

"PH" - The logarithm of the reciprocal of the hydrogen-ion acity in grams per liter of solution as measured by standard analytical procedures.

"Pollution" - An alteration of the quality of the waters of the State by waste to a degree which unreasonably affect (1) such waters for beneficial use or (2) facilities which serve such beneficial uses.

"Premise" - A parcel of real property, or portion thereof, including any improvements thereon, which is determined by the Director to be a single unit for the purposes of receiving, using, and paying for sewerage service.

"Pretreatment" - The treatment or flow limitation of industrial wastes prior to discharge to the City sewerage system.

"Public Agency" - The United States Government or any department or agency thereof; the State of California or any department or agency thereof; any city, county, town or any department or agencies thereof; any school district; any other governmental or public district or entity; or any other legal public district, entity or entities; or any combination of the foregoing.

"Sewer, Sanitary Sewer" - A pipe or conduit which carries sewage and/or industrial wastes and to which storm, surface, and groundwaters are not intentionally admitted. Unless otherwise qualified, he word "Sewer" when used in this ordinance shall be taken to mean " nitary Sewer." A City sewer or public sewer is any sewer located within an easement or public right of way and which is maintained by the City. A building sewer or lateral service sewer or privately maintained collector sewer is a sewer on private property serving a specific building or property and is maintained by the owner(s) thereof.

"Sewerage System" - All works for collecting, pumping, treating, disposing, storing and reclaiming sewage.

"Slug" - Any discharge of water, sewage, or industrial waste which is concentration of any given constituent or in quantity of flow exceeds, for any period of duration longer than fifteen (15) mintues, more than five (5) times the average twenty-four (24) hour concentration or flow rate during normal operation.

"Standard Analytical Procedures" - Procedures contained in the latest editions of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association), American Society of Testing and Materials (ASTM) standard and tentative methods, and other standard procedures appropriate to the conditions as set forth or approved by the EPA.

"Suspended Solids (SS)" - Particulate matter present in sewage and retained on a filter (Nonfilterable) in a standard analytical procedure.

"Trade Secret" - A method or process, not patented, but known only to persons using it in producing an article of trade or a service having commercial value.

"User" - Any eprson who is owner of record, lessee, sublessee, mortgagee in possession, or responsible for property having a connection to a City sewer or for processes which contribute sewage or industrial waste to a City sewer. See also "Industrial User."

User Agency" - A public agency which by agreement with the City of Cloverdale is served by and acquires a capacity service in the City of Cloverdale Sewerage System.

Water Quality Requirements: - Requirements for City's treatment plant effluent established by the National Pollutant Discharge Elimination System permit, or by State or Federal regulatory agencies for the protection of receiving water quality. Water quality requirements include effluent limitations and waste discharge standards, limitation, or prohibitions which may be established or adopted from time to time by State or Federal laws or regulatory agencies.

Section 4. Sewers Required:

A. It shall be unlawful to discharge any sewage, industrial wate or other polluted waters into any storm drain or natural outlet.

B. It shall be unlawful to construct, reconstruct, relocate or alter any privy, privy vault, cesspool, septic tank or other facility intended or used for the disposal of sanitary sewage within the City if a public sewer is available, as described in Section

C. The owner of any premises used for human occupanyc, employment, recreation or other human purpose situated within the City and abutting on any street or easement in which there is situated a sanitary sewer within 300 feet of the property line and designed to serve such premise is hereby required to install, at his expense, a connection with the public sewer in accordance with the provisions of this ordinance within ninety (90) days after date of official notice by the City Council to do so and the private sewage disposal system shall be removed or cleaned of sludge and filled with gravel, sand or clean compacted earth.

Section 5. Private Sewage Disposal Systems:

A. Objectives. The objectives of regulating private sewage disposal systems are as follwos:

(1) To attain the highest possible level of public health standards within the development in the City of Cloverdale;

(2) To ensure uniformity and consistency in teh standards of sanitary service within the City;

(3) To achieve and maintain environmental protection by utilizing a public sewer system instead of private septic systems;

(4) To prevent the use of private septic systems within the City except where specified conditions of approval are met.

B. Permit Required. No septic tanks shall be installed within the City without a septic tank permit, approved by the Director of Public Works. No septic tank permit shall be approved for a lot, if connection is possible in an existing sewer within 500 feet of the property line.

C. Conditions of Approval. Septic tank permit applications may be approved by the Director of Public Works for issuance by the Sonoma County Health Department, after review by the Director of Public Works and subject to the following conditions:

(1) All Director of Public Works approvals of septic tank permit applications shall include a finding that City sewer facilities will not be available within a reasonable time.

(2) Except lots legally existing on the effective date of this ordinance, all lots for which septic tank permits are sought must be at least two (2) acres in size and less than 30 percent slope for the leach field area.

(3) All septic tank permit applicants shall furnish results of soil percolation tests performed under wet weather standards unless the applicant has furnished evidence sufficient to establish that it has been previously demonstrated to a County Health Officer of the Regional Board that percolation rates are satisfactory in the area for which the permit is sought.

(4) All septic tank permit applications shall be accompanied by plans which conform to Sonoma County Health Department standards.

(5) All applicants for whom sseptic tank permits are approved shall, prior to issuance of the permit, record an irrevocable covenant running with the land obligating the land to connect to the public sewer when required by the Director of Public Works as part of an area-wide sewer installation program.

(6) All applicants for whom septic tank permits are approved and issued shall allow inspection of their septic system by a Sonoma County Health Department representative upon presentation of proper identification.

(7) At such time as a public sewer becomes available to the premises served by a private sewage disposal system constructed subsequent to enactment of this ordinance, the building sewer shall be connected to said public sewer, as provided in this ordinance.

(8) Discharge of industrial waste from any premise within the City onto land or to any natural outlet may be permitted only if the discharge complies with all requirements of the Regional Water Quality Control Board and of all other local, state and federal laws and regulations.

Construction of Sewers and Sewer Connections

No unautorized person shall uncover, make any connection with

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or opening into, use, alter or disturb any public sewer or appurtenances thereof without first obtaining a written permit from the director.

All construction of public sanitary sewers, of sewers to become public sanitary sewer or of lateral service connection sewers shall conform to the design criteria, the standard plans and specifications and the inspection and testing for sanitary sewers in accordance with current City standards.

Connection of Surface or Subsurface Drains. No person shall make connection of roof downspouts, areaway drains, foundation drains, or other sources of surface runoff or groundwater to a building sewer or lateral service sewer which in turn is connected directly or indirectly to a public sanitary sewer.

Section 7. Sewer Users

All users shall be classified for sewage collection and disposal purposes in accordance with the governing activity conducted on the premises, as determined by the Director of Public Works. The purpose of the classification is to facilitate the regulations of sewer use based on character and quantity of flow; to provide an effective means of source control of toxic substances; and to provide a basis for sewer use charges to insure an equitable recovery of capital and operating costs. Use classifications are as follows:

Residential Users whose premises are primarily for residential purposes and have no significant producing or processing activity of a commercial or industrial nature.

Nonresidential Users whose premises are primarily for commercial, governmental, industrial or other nonresidential activity but excluding premises of industrial users. Incidental residential use is not precluded.

Industrial Industrial users as defined in Section 3.

Section 8. Basis of Sewer Service Charges

Sewer service charges shall be based on the following rules and standards:

(1) The standard utility accounting period shall be a fiscal year commencing July first and ending June thirtieth.

(2) The service charge shall be payable by each user on a bi-monthly rate and generally billed and paid with the bill for water service to the same premises.

(3) Sewer service charges shall be based upon the estimated actual use of the sanitary sewerage system by the premises or user, except that a minimum charge may be set based upon a minimum bi-monthly usage.

(4) Charges for Residential Users shall be based on metered consumption of water during the bi-monthly water metering period of least consumption between the period November 1 and March 31. For Residential Users supplied by private water supplies, the rate shall be not less than that applicable to like residences served by a metered public water supply.

(5) Charges for Nonresidential and Industrial Users shall be based on bi-monthly or monthly metered water consumption from all sources but excluding water which, upon determination by the Director of Public Works is found to not be discharged to a sanitary sewer.

(6) Charges for Industrial Users may also be based on the pounds of BOD and suspended solids and any other applicable waste loadings discharged to the sewer each billing period determined in accordance with Section . Special charges may be made to reimburse the City for abnormal costs incurred because of other pollutants in the wastewater. Rates for seasonal industries shall include in their capital-related element the costs of allocated capacity service in the System. Industrial rates, to the extent applicable, shall include provisions to comply with industrial cost recovery provisions of the Federal Water Pollution Control Act of 1972.

(7) Charges to users of premises situated partly or wholly outside of the City limits of Cloverdale may be cahrged and in lieu fee for costs of related services not covered by the sewer service charges for users within the City, as set forth but not to exceed a surcharge of 10% more than users within the City Limits.

(8) Connection Fee. The one time connection fee as set forth in the master fee schedule of the City of Cloverdale or sewer fee ordinance shall apply to all sewer connections and there shall be no additional charge for users outside the City limits.

Section 9. Utility Accounting

An accounting system shall be maintained in accordance with generally accepted accounting principles. It shall be sufficient in detail to demonstrate that collections and disbursements are made in compliance with the intents and purposes of State and Federal regulations.

Section 10. Vacant Premises.

Upon affidavit by the owner of a premises that is vacant, water service shall be stopped and sewer service charges shall be suspended until water service is restored.

Section 11. Liability of Owners for Collection of Charges

The Council of Cloverdale finds that the public health and welfare of the people of the City of Cloverdale is benefited by a sanitary sewerage system. All owners are liable for the charges rpescribed by this chapter regardless of whether the owners use the service herein provided.

Section 12. Charging Occupant. Ultimate Liability of Owner If Occupant Fails to Pay.

In the case of premises that are occupied by someone other than the owner, such charges may be billed to the occupant of such premises. If the occupant fails to pay such charges the owner shall be liable to the City for such charge, but in no event shall the charge billed the owner exceed billing for a four-month period.

Section 13. Additional Remedy

The City may terminate sewer and water sources to the property for which charges for sewer services are delinquent and may refuse to restore such services until all such charges, together with service charges for resumption of such services are fully paid. Water and sewer services may be terminated to the property regardless of the identity of the owner or occupant of the property, or user of the service.

Section 14. PERMITS - GENERAL

The following permits are provided for in this section:

(1) Connection Permit - a written authorization by the Director to make a specific connection to a public sewer.

(2) Sewer Use Permit - a license for a user to discharge wastewater into a public sewer. There are two types:

  (a) Nonresidential sewer use permit;
  (b) Industrial sewer use permit;

Section 15. CONNECTION PERMIT

No connection to a public sewer shall be made until a connection permit has been issued therefor by the Director of Public Works. The owner of the premises to be served shall provide all information required by the application form supplemented by any plans, specifications, or other information which in the judgment of the Director of Public Works is pertinent to the location and use of the premises. Separate connections may be required for each building of a single premise or for separation of industrial waste from sanitary sewage. All applicable connection fees shall be paid upon submittal of the application in accordance with the then in effect City ordinance or resolution establishing sewer connection fees.

The permit shall be validated upon final inspection and accpetance of construction of the connection and, when required, upon the application of and issuance of a sewer use permit.

Section 15. SEWER USE PERMIT

Users whose premises are designated as either Nonresidential or Industrial under Section 3 shall not use the public sewage system, either directly or indirectly through a private collection system without first obtaining the proper Sewer Use Permit except as provided herein.

(a) All Nonresidential or Industrial user applicants who intend to connect their premises to the sewer on or after the effective date of this Ordinance must obtain a Sewer Use Permit.

(b) On or after the effective date of this Ordinance, users who acquire or newly occupy premises which were then connected to the sewer must obtain a Sewer Use Permit.

(c) Existing users whose premises are connected to the sewer prior to the effective date of this Ordinance shall file an application for a Sewer Use Permit within 30 (thirty) days after notice by the Director of Public Works to do so. Terms under which industrial users are permitted to use the public sewerage system under previous ordinances shall remain in effect until sixty (60) days after notice to file an application for an Industrial Sewer Use Permit under this Ordinance has been issued and for such additional time as may be extended for good cause by the Director of Public Works.

Section 16. APPLICATION FOR SEWER USE PERMIT

Persons applying for a Sewer Use Permit shall complete and file with the Director of Public Works an application form, accompanied by the applicable fees. The application may require the following information: description of activity, facilities, and plant process on the premises, including raw materials processes and types of materials which are or could be discharged; total product produced, by type; number and type of employees; estimated wastewater strength; estimated wastewater flow; average and peak wastewater discharge flow for each lateral service sewer; locations of lateral service sewers, sampling points, and pretreatment facilities; water supply information; source, volume and chemical characteristics of each tank contents, and any other information the Director of Public Works shall maintain the privacy of all business data and trade secrets supplied and identified as confidential matter by the applicant.

The Director of Public Works will evaluate the data furnished by the applicant and may require additional information. After evaluation and approval of the data furnished, the Director of Public Works will determine the class of the user and may issue a Nonresidential or Industrial Sewer Use Permit subject to conditions and terms as provided herein.

Section 17. CONDITIONS ON SEWER USE PERMITS

Sewer Use Permits may contain prohibitions on discharge of certain toxic substances as identified by Federal or State law and of hazardous substances and may contain other conditions as deemed appropriate by the Director of Public Works to insure compliance with this Ordinance and the permit.

Industrial Sewer Use Permits may contain any or all of the following conditions:

(1) Separation of industrial wastewater from sanitary sewage prior to discharge to the public sewer.

(2) Pretreatment of industrial wastes.

(3) Limits on flow rate, time of discharge, strength of specific constituents or characteristics, or requirements for flow and constituent regulation or equalization.

(4) Requirements for inspection, flow measurement, and sampling facilities, including access to such facilities by the Director of Public Works.

(5) Monitoring program which may include: sampling locations, frequency and method of smapling, number, types, and standard for tests; and the establishment of a reporting schedule. Monitoring shall be provided by the user at his expense, using a State certified laboratory. The user's laboratory, where available, may be used if approved by the Director of Public Works.

(6) Submission of technical reports or discharge reports.

(7) Maintenance of plant records relating to wastewater discharges, as specified by the Director of Public Works and affording the Director access thereto.

Section 18. TERMS OF SEWER USE PERMITS

A Sewer Use Permit shall be valid for a term of five (5) years from the date of its issuance subject to the following conditions:

(1) Change in User. A Sewer Use Permit shall not be assigned or transferred.

(2) Change in use. Whenever the use of the premises by the user, or the character of the discharge, changes materially from that stated in the permit application, or upon demand of the Director of Public Works, the user shall file an application for a new permit within sixty (60) days.

(3) Change of permit conditions. The City may change the conditions of a Sewer Use Permit, including changing the limits or constituents of wastewater strength from time to time, as circumstances may require. The City shall allow a discharger reasonable time to comply with such changes.

(4) Temporary suspension. A Sewer Use Permit may be temporarily suspended by the Director of Public Works at any

time if, in his opinion, the continued discharge of the waste or water into the sewerage system would, when combined with the other discharges into the sewerage system exceed the City's allocated capacity service in the Sewerage System, substantial jeopardize the ability of the treatment system to meet water quality requirements or would cause an unsafe condition to occur. In lieu of temporary suspension of permits, the Engineer may impose such temporary restrictions, conditions, or limitations upon the quantities, qualities, and rates of discharge made thereunder as he deems necessary to assure that said receiving water quality requirements will not be violated by the sewage discharged by the City to the System, or to alleviate the unsafe condition. In addition the Director of Public Works may suspend a Sewer Use Permit at any time if he deems said suspension necessary to halt or prevent a discharge that has the potential to endanger human lives and/or injure the environment.

(5) Notice of suspension. Notice of the temporary suspension or the imposition of temporary restrictions, conditions, or limitations shall be given in writing by the Director of Public Works to the permittee at least twenty-four (24) hours prior to their effective date. Delivery of said notice to the permittee's place of business within the City shall constitute delivery of notice to permittee. In circumstances where the Director of Public Works deems it necessary to suspend a Sewer Use Permit in order to prevent potential danger to human life and/or injury to the environment, no notice pursuant to this section is required.

(6) Revocation. A Sewer Use Permit may be revoked by the Director of Public Works for any of the following reasons:

a. Failure of the permittee to comply with the conditions of the permit.

b. Failure of the permittee to pay when due any charges imposed as a condition of the issuance of a permit.

No permit shall be revoked by the Director of Public Works until he has notified the permittee in writing of his intent to do so and has afforded the permittee the opportunity to appear before the City Council within a reasonable period of time to show cause why the permit should not be revoked; provided, however, a permit may be summarily revoked by the Director of Public Works without prior notice to the permittee if, in the opinion of the Director of Public Works the continuing discharge would result in a violation of receiving water quality requirements.

(7) Compliance. Unless directed otherwise on the notice of revocation or suspension of permit, the permittee shall cease discharging into the public sewer on the effective date of said revocation or suspension or shall conform with temporary restrictions, conditions, or limitations on the effective date of such imposition.

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No person shall discharge, or cause to be discharged, to a City sewer line the following:

(1) Any cooling water, or unpolluted industrial process water. Unpolluted water shall be discharged to such pipelines as are specifically designated as storm drain, or to a natural outlet approved by the Engineer.

(2) Any waste or wastewater having a PH lower than 5.0, or having any other corrosive property capable of causing damage or hazard to structures, equipment, or personnel.

(3) Garbage, except ground garbage from residential and commercial premises where food is prepared and consumed. For the purpose of the Ordinance, garbage shall mean that it has been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than 0.25 inch (6mm) in any dimension.

(4) Any ashes, cinders, sand, mud, straw, leaves, grass cuttings, metal, glass, ceramics, rags, feathers, tar, plastics, wood, paunch manure, or any other solid or viscous substance capable of either causing obstruction to the flow in sewers or interfering with the proper sewerage system operation and/or maintenance.

(5) Any radioactive wastewater, except when the person is authorized to use radioactive material by the U.S. Nuclear Regulatory Commission, or other governmental agency empowered to regulate the use of radio-active materials, and when the wastewater is discharged in strict conformance with current Nuclear Regulatory Commission regulations and recommendations for safe disposal, an in strict compliance with all rules and regulations of State, local regulatory agencies, and the Sewer Use Permit.

(6) Those pesticides and other toxic pollutants identified by the EPA and in excess of amounts determined by the EPA in accordance with Section 307 (a) of the Federal Water Pollution Control Act of 1972 or as subsequently amended, which may be revised from time to time, including:

(a) Aldrin, Dieldrin
(b) Benzidine and its salts
(c) DDD, DDE and DDT
(d) Endrin
(e) Cadmium and all cadmium compounds
(f) Cyanide and all cyanide compounds
(g) Mercury and all mercury compounds
(h) Polychlorinated biphenyls (PCB's)
(i) Texaphene

(7) Any substance in violation of the Categorical Pretreatment ment Standards referred to in Sections 307 (b) and (c) of the Clean Water Act.

Section 19. REGULATION OF WASTE DISCHARGES

PERMISSIBLE DISCHARGES

Wastewater may be discharged into City sewer for collection, treatment, and disposal by the City, provided that such wastes do not contain substances probhibited or exceed limitations of wastewater volume or strength, as set forth in this Ordinance and, if applicable, in a Sewer Use Permit; and further, provided that the user pays all applicable City charges and is in compliance with all other terms of this Ordinance.

Section 20. GENERAL PROHIBITIONS

No persons shall discharge, or cause to be discharged, into a public sanitary sewer:

(1) Any water, wastes, or other matter which will result in contamination, pollution, or a nuisance.

(2) Any stormwater, surface water, groundwater, road runoff, or subsurface drainage.

Section 21. PROHIBITED EFFECTS

No eprson shall discharge, or cause to be discharged, wastewater into a public sewer if it contains substances or has characteristics which, either alone or by interaction with other wastewater, cause or threaten to cause:

(1) Damage to the City sewage collection system or interference with or impairment of the operation or maintenance of that system.

(2) Obstruction of flow in sewers.

(3) Damage to or interference with, or overloading, of the Subregional interceptors, treatment or disposal system or processes.

(4) Flammable or explosive conditions.

(5) Wastewater, or any other by-products of the treatment process, to be unsuitable for reclamation and reuse, or interference with any processes for reclamation.

(6) Noxious or malodorous gases or odors.

(7) Discoloration or any other condition in the quality of the treatment plant effluent in such a manner that receiving water quality requirements established by law cannot be met by the City.

(8) Conditions at or near City facilities which violate any statute, or any rule, regulation, or ordinance of any public agency or State or Federal regulatory body.

Section 22. PROHIBITED SUBSTANCES OR CHARACTERISTICS

Section 23. REPORTING REQUIREMENTS AND NOTIFICATION OF DISCHARGE

Those users which come within the Code of Federal Regulations definition of "Categorical Industries" shall comply with the reporting requirements of 40 Code of Federal Regulations 403.12.

Notification of Discharge. Users shall notify the Agency immediately upon accidentally discharging wastes in violation of this Ordinance to enable countermeasures to be taken by the Agency to minimize damage to the community sewer, treatment facility, treatment processes and the receiving waters.

This notification shall be followed, within 10 days of the date of occurrence, by a detailed written statement describing the cause of the accidental discharge and the measures being taken to prevent future occurrence.

Such notification will not relieve users of liability for an expense, loss or damage to teh sewer system, treatment plant, or treatment process or for any fines imposed on the Agency on account thereof, under Section 13550 of the California Water Code or for violations Section 5650 of the California Fish and Game Code.

Section 24. REGULATED DISCHARGE CHARACTERISTICS

No person shall discharge or cause to be discharged, to a City sewer, any of the following without first obtianing a Sewer Use Permit that specifically permits such industrial waste discharge characteristics.

(1) Discharge during a daily twenty-four (24) hours period in excess of 20,000 gallons.

(2) Volume of flow or concentration of wastes constituting "slugs", as defined herein.

(3) Discharge which ahs a daily average concentration of:

- (a) BOD in excess of 300 milligrams per liter; or
- (b) COD in excess of 700 milligrams per liter; or
- (c) Suspended solids in excess of 350 milligrams per liter.
- (d) Polar grease in excess of 100 milligrams per liter.
- (e) Nonpolar grease or other hydrocarbons in excess of 50 milligrams per liter.

(4) Water or wastes with PH lower than 6.0 or higher than 9.5.

(5) Discharges containing metal pickling or etching wastes or plating solutions, whether neutralized or not.

(6) Any discharge which ahs an average daily concentration of:

- (a) Arsenic exceeding 0.2 milligrams per liter.
- (b) Hexavalent chromium exceeding 0.1 milligrams per liter or total chromium exceeding 0.5 milligrams per liter.
- (c) Copper exceeding 0.2 milligrams per liter.

Section 25. ADMINISTRATION

A. RESPONSBILITY

The Director is charged with responsibility for the City's wastewater control program and the administration and enforcement of the provisions of this Ordinance. For the purpose of inspecting the facilities for ocnformance with the provisions of this Ordinance, he may enter upon the premises of any person discharging or applyginf ro permission to discharge nonresidential or industrial wastes into the sewerage system of the City at any time. Such entry may be announced or unannounced, scheduled or unscheduled and may occur without prior notification to the user.

B. UNUSUAL CONDITIONS

Notwithstanding any provision of this Ordinance to the contrary, the City Council of Cloverdale and any person may enter into an agreement where unusual conditions compel special terms and conditions and charges for the interception, treatment and disposal of an industrial waste necessary to meet the purposes of this Ordinance. In no event, however, may the "Categorical Standards" referred to in Sections 20, 21, 22, 24 of this Ordinance, or any other Federal or State standard, be relaxed or waived.

C. MEASUREMENT OF WASTEWATER CHARACTERISTICS

All measurements, tests, and analyses of the characteristics of industrial wastewater shall be, unless otherwise indicated or required, determined in accordance with standard laboratory procedures as defined herein, and shall be determined at the control manhole or upon suitable samples taken at said control manhole. In the event no special manhole has been required, the control manhole shall be considered to be the nearest access determined as suitable by the Director.

D. CONTROL MANHOLE

The Sewer Permit may require any user to construct, at his own expense, a metering and sampling station, or control manhole, together with the corresponding measuring and sampling equipment. The control manhole shall be constructed on the lateral service sewer of the discharger and at a location approved by the Director; provided that the Director may require the installation of such facilities on the premises of the user at a location which iwll be accessible to the Director at all times. Construction shall be completed within sixty (60) days of waste discharge permit approval and the Director may require the instllation of such control manholes on each sewer lateral.

E. UNMETERED WASTE FLOWS

Sewage and industrial waste flwos from dischargers nonresidential and industrial not required to install control manholes shall be determined as follows:

(1) For premises where no significant portion of the water

received from any source is consumed in the principal activity of the user, or is removed from the premise by means other than the sewerage system, the volume of waste flow shall be equal to the total volume of water used from all sources. Water received from each source shall be determined by the registration shown in the corresponding water meter. Unmetered water sources shall be equipped with meters at the user's expense. Size and type of water meters and frequency of testing shall be specified in the Sewer Use Permit.

(2) For premises where a portion of the water received from any source does not flow into the sewerage system, either because of the principal activity of the user or because of its removal by other means the volume of waste flow shall be equal to the volume of water used from all sources less the volume of water removed by the user's activity. Water received from each source, as well as water removed, shall be determined by the registration shown in the corresponding water meters. Unmetered water removals shall be equipped with meters at the user's expense. Size and type of watermeters and frequency of testing shall be as specified in the Sewer Use Permit.

Section 26. PRETREATMENT FACILITIES

Where required in the Waste Discharge Permit or by State or Federal laws and regulations, the discharger shall provide, at his expense, such preliminary treatment or controls as may be necessary to eliminate or reduce the objectionable characteristics, constituents, or quantities and rates of discharge to conform to the maximum limits provided for in the permit.

Plans, specifications, and any other pertinent information related to proposed pretreatment facilities shall be submitted for the approval of the Director. Construction of such facilities shall not commence until said approval is obtained in writing, and use of such facilities shall not commence until completed facilities are approved in writing. Pretreatment facilities shall be continuously maintained in satisfactory and effective operating condition to the satisfaction of the Director.

Section 27. INTERCEPTORS

Grease, oil, or sand interceptors shall be provided when, in the opinion of the Director, they are necessary for liquid wastes containing grease in excessive amounts, or sand, flammable materials, or other harmful ingredients.

All itnerceptors shall be of a type and capacity approved by the Director and shall be located so as to be readily and easily accessible for inspection and cleaning. All grease, oil, and sand interceptors shall be maintained in continuously efficient operation at all times.

Section 28. DISCHARGE REPORTS FROM USER

The Director may require waste reports, including, but not limited to, questionnaires, technical reports, sampling, reports, and test analyses, and periodic reports of wastewater discharge. When the requested report is not adequate in teh judgment of the Director, he may require the user to supply such additional information as the Director deems necessary.

Water reports may include, but are not necessarily limited to, nature of the process, volume and rates of wastewater flow, elements, constituents, and characteristics of the wastewater, together with any information required in the Sewer Use Permit.

Confidential information. All information and data on a user obtained from reports, questionnaires, permit application, permits and monitoring programs and from inspections shall be available to the public or other governmental agency without restriction unless the user specifically requests and is able to demonstrate to teh satisfaction of the Agency that the release of such information would divulge information, processes or methods which would be detrimental to the user's competitive position.

When requested by the person furnishing a report, the portions of a report which might disclose trade secrets or secret processes shall not be made available for inspection by the public, but shall be made available to governmental agencies for use in making studies: provided, however, taht such portions of a report shall be available for use by the State or any State agency in a judicial review or enforcement proceedings involving the person furnishing the report. Wastewater constituents and characteristics will not be recognized as confidential information.

Information accepted by the Agency as confidential, shall not be transmitted to any governmental agency or to the general public by the Agency until and unless prior and adequate notification is given to the user.

Section 29. ENFORCEMENT

A. RULES FOR ENFORCEMENT

The Director may adopt procedures and rules for the implementation and administration of this ordinance, including, but not limited to:

(1) Require the discharger to submit schedule of remedial or preventative measures. When the Director finds that a discharge of industrial wastes is taking place, or threatening to take place, that violates or will violate prohibitions or limits prescribed by this ordinance, or other wastewater source control requirements, or the provisions of a Sewer Use permit, the Director may require the discharger to submit for his approval a detailed time schedule of specific actions the discharger shall take to correct or prevent said violations of requirements.

(2) Order to cease and desist. When the Director finds that a discharge of industrial wastes is taking place or threat-

ening to take place in violation of prohibitions or limits of this ordinance, or wastewater source control requirements, or the provisions of a Sewer Use Permit, the Director may issue an order to cease and desist and may direct that those persons not complying with such prohibitions, limits, requirements, or provisions (1) comply forthwith; (2) comply in accordance with a time schedule set by the Director; or (3) in the event of a threatened violation take appropriate remedial or preventative action.

(3) Elimination of surface or subsurface drainage. When the owner of premise fails to comply with an order to cease and desist the entrance of surface or subsurface drainage water from his premise to the public sewer the Director shall have the right to enter the premises, and to block the flow of drainage water. The csots thereof shall become a lien upon the premises in accordance with appropriate sections of Article

(4) Damage to facilities and processes. When the discharge of industrial wastes causes an obstruction, damage, or other impairment to the sewerage facilities or treatment processes, the Director will tabulate the expenses incurred for the work required to clean or repair the facility and correct the treatment process. Such expenses shall be added to the discharger's billing for industrial service charges.

(5) Termination of service. The City may terminate or cause to be terminated the service to any suer if a violation of any provision of this ordinance is found to exist or threatens to cause a condition of contamination, pollution or nuisance, as defined in this ordinance. This provision in adition to other statues, rules or regulations authorizing termination of service for delinquency in payment, or for any other reason. Whenever a premise has been disconnected from the City's sewerage system for a violation of this Ordinance, reconnection of said premise shall be in accordance with the City of Cloverdale regulations.

B. REQUEST FOR RULING

If any discharger or applicant for a permit disputes the interpretation or applicaiton of this Ordinance, he may request a ruling by the Director who will set forth his determinations on the request.

C. APPEAL

If the discharger or applicant for a permit is dissatisfied with the determinations made by the Director under the preceding section, he may, within thirty (30) days after receipt of said ruling of the Director, appeal said ruling by giving written notice of the basis of his appeal to the City Council of the City of Cloverdale. The City Council shall, within thirty (30) days after receipt of said written notice of appeal, make a final determination of the issue submitted.

E. PENALTIES

No person shall violate any provisions of or fail to comply with any of the requirements of this Ordinance. Any person intentionally of negligently violating any of the provisions or failing to comply with any of the requirements of this Ordinance shall be guilty of a misdemeanor. Each person shall be guilty of a separate offense for each and every day during any portion of which any violation of any provision of this Ordinance is committed, continued, or permitted by such person and shall be punishable accordingly.

F. SIX THOUSAND DOLLAR PER DAY DAMAGES

Any person who intentionally or negligently violates any order issued by the Engineer for violation of provisions of this ordinance or regulating or prohibiting discharge of wastewater which causes or threatens to cause a condition or contamination, pollution, nuisance, as defined in this ordinance, may be liable civilly in a sum not to exceed Six Thousand Dolalrs ($6,000.00) for each day in which such violation occurs.

The City Attorney, upon request of the City Council of the City of Cloverdale, shall petition the Superior Court to impose, assess and recover such sums.

G. INJUNCTION

Whenever a discharge of wastewater is in violation of the provisions of this Ordinance or otherwise causes or threatens to cause a condition of contamination, pollution, or nuisance, the Director may petition the Superior Court for the issuance of a preliminary or permanent injunction, or both, as may be appropriate, restraining the continuance of such discharge.

H. FINE FOR FALSIFICATION OF DATA

Any person who submits reports required by the preceding sections of this chapter, which he knows or should have reason to know, contains falsified data shall be subject to a fine not to exceed $10,000.00.

If any provision of this ordinance, or the application thereof to any person or circumstance, is held invalid, the remainder of the Ordinance or the application of such provision to other persons or or circumstances, shall not be affected thereby.

All ordinances or parts of Ordinances in conflict herewith are hereby repealed.

This ordinance shall be in full force and effect from and after its adoption and publication or as soon thereafter as all precedents of law have been satisfied.

Ordinance No. 420-1988

Approved and adopted this 16th day of February 1988.

APPROVED: ______________________
John H. Doble, Mayor

ATTEST: ______________________
Deputy City Clerk

I hereby certify that the foregoing Ordinance No. 420-88 was introduced in a regular meeting of the City Council on the 1st day of February, 1988, and was adopted at a regular meeting of the City COuncil on the 16th day of February, 1988, by the following roll call vote:

AYES: Pell, Teague, Mellon and Doble

NOES: None

ABSENT: Domenichelli

ABSTAIN: None

ATTEST: Pamela J. [illegible]
Deputy City Clerk

Exhibit D - Memorandum from Gerry Hiatt on MGM Brakes Responsiveness Summary

MEMORANDUM 8 August 1988

To: Johanna Miller (T-4-2)

From: GERALD F. S. HIATT, Ph.D. (T-6)
Regional Expert Toxicologist

Subject: MGM BRAKE/CLOVERDALE - RESPONSIVENESS SUMMARY

Per your request, I am responding to criticisms of the proposed remediation for the MGM Brake/Cloverdale Superfund site. Three documents were reviewed:

- Comments on EPA Endangerment Assessment at the MGM Brakes Site, James L. Byard, 31 May 1988.
- Estimates of Onsite Concentrations of PCBs in Ambient Air - MGM Brakes, Colverdale, CA, Kennedy/Jenks/Chilton, 31 May 1988.
- Cancer Risk Estimates for Exposure to PCBs During and Following Alternative Remediation Actions at the MGM Brakes Site, Health Risk Associates, 1 June 1988.

GENERAL OBSERVATIONS:

The remedial objective at the MGM Brake/Cloverdale Superfund site is consistent with established policy of the U.S. Environmental Protection Agency (EPA). A remediation goal of 10 ppm polychlorinated biphenyls (PCBs) in soils was chosen based on EPA's policy for clean up of PCB spills, as stated in Development of Advisory Levels for Polychlorinated Biphenyls (PCBs) Cleanup, Office of Health and Environmental Assessment, U.S. EPA, May, 1986. Use of existing guidance for Superfund remediation activity is both appropriate and consistent with EPA policy.

BYARD CRITICISMS:

Dr. Byard commented on the risk assessment which was cited as partial justification for requiring remediation of the PCB contamination at the site. Most of Dr. Byard's criticisms were directed at procedures which are established practices of the EPA.

Most of Dr. Byard's comments addressed the following issues:

- EPA's use of PCB concentrations obtained from modeling as opposed to use of Acurex monitoring data for estimating risk from airborne PCBs.
- derivation of a cancer potency factor for PCBs using the Linear Multistaged extrapolation model.
- use of an exposure scenario which assumes that non-workers, including children, will come into direct contact with PCB-contaminated soil at the site.

Monitoring Data:

The Acurex data on airborne PCB concentrations at the site represent only a single 24 hour sampling event. They are therefore not appropriate for either risk estimation from long-term exposures or estimation of worst-case exposures.

Many factors affect airborne chemical exposures; most of these vary considerably with meteorological conditions, and hence with season. Acurex alluded to some of these in the attachment to letters to K/J/C (23 Dec 87, 20 Jan 88):

- "During the 24-hour sampling period the wind changed direction many times." A worst-case scenario for exposure via dust would have a constant wind, of sufficient magnitude to generate appreciable dust levels, blowing straight at the closest residences to the site.
- "The weather conditions during the time of testing were typical of that particular season." Estimates of risk from long-term exposures should be based on yearly, not seasonal, exposure conditions.
- "The wind may tend to have a diluting effect on the ambient concentrations..." Winds on the single day of sampling can be expected to have diluted airborne PCB vapors, resulting in diminished exposures.

Acurex concluded that the "best approach to characterizing emissions from the site would be to conduct ambient air test [sic] over a period of days during many different seasons or weather conditions."

The need for longer term monitoring is also illustrated by the fact that different weather conditions will maximize airborne PCB by different mechanisms:

- hot, calm weather conditions will tend to maximize PCB volatilization and therefore increase exposure to PCB vapors.
- dry, windy conditions will tend to maximize dust generation and therefore increase exposure to PCB adsorbed to particulates.

Cancer Potency Factor Derivation:

The MGM Brake/Cloverdale risk assessment reflects current EPA policy regarding estimation of potential cancer risks from chemicals at Superfund sites. This policy directs the risk assessor to use EPA approved cancer potency factors from IRIS (Integrated Risk Information Service) when available, or from individual Program Offices when IRIS values are not available.

Since there is currently no cancer potency factor for PCBs within IRIS, use of the PCB cancer potency factor derived by the Carcinogen Assessment Group (CAG), as was done in this risk assessment, was entirely appropriate. Regardless of Dr. Byard's own interpretation of the scientific data on PCB carcinogenesis, EPA policy is clear on the use of established cancer potency factors.

Future Use Exposure Scenario:

An exposure scenario which assumes children may come into direct contact with, and ingest, PCB-contaminated soil is appropriate for the

MGM Brake/Cloverdale site. This exposure pathway represents a reasonable potential future secnario at this site.

Under the Superfund Program, it is EPA's responsibility to estimate potential risks from both current and potential future uses of contaminated sites. Since the area immediately adjacent to the MGM Brake site is currently slated for residential development, it is reasonable to assume that the site itself may also be developed at some time in the future, thus providing the opportunity for this exposure pathway.

It should be noted that the soil ingestion factors apparently used in the OHEA's PCB Advisory document do exceed policy which is currently being developed for Region IX risk assessments. This new policy will recommend a sliding scale for soil ingestion factors based on age:

Age (years)	Average (mg/d)	Maximum (mg/d)
0-1	50	250
1-6	100	500
6-11	50	250
>11	25-50	100

K/J/C and HEALTH RISK ASSOCIATES CRITICISMS:

These two documents address risk estimates for the various remedial alternatives. They purport to show that the short term risk associated with implementing EPA's preferred remediation is greater than for other, less comprehensive, alternatives.

The crux of the issue is dust generation during the remedial process. Both documents base their conclusions on estimates of airborne PCB concentrations during the remediation process which are greater than EPA estimates. These higher PCB levels are derived from assumed dust levels that are greater than EPA's assumptions.

K/J/C assumes dusts generated during remediation may reach levels between 1 - 5 mg/m^3 in air. Health Risk Associates then uses this assumption to assert that short term risks associated with remediation are 2.5 times greater for excavation and offsite disposal (EPA's preferred alternative) than for capping.

Since EPA is able to specify and monitor working conditions during remediation, this issue is moot. It is common in risk assessments to make worst-case or plausible worst-case assumptions about dust generation during work activities (the OSHA TEL for nuisance dust, 10 mg/m3, is sometimes used). These assumptions are appropriate in those situations where EPA has no control over working conditions. However, when the activity being modeled is site remediation, EPA is able to specify working conditions and therefore assure that dust generation is low enough keep risks in an acceptable range.

It should be noted that the potential short term risks associated with remediation which were estimated by K/J/C and Health Risk Associates are within a range often considered acceptable by EPA. They estimate potential risks of 2.9×10^{-6} for capping and 7.3×10^{-6} for excavation and offsite disposal. Therefore, both remedial alternatives pose potential risks less than 10^{-5}; EPA often decides not to regulate risks of this magnitude.

GFS H

cc: Kathleen Shimmin

Exhibit E - Memorandum on Atmospheric Dust Levels for Construction Activities

CAMP DRESSER & McKEE INC.

MEMORANDUM

TO: John T. Wondolleck

FROM: Sue A. Loyd

DATE: August 12, 1988

DOCUMENT NO.: T598-C09-IO-CFPM-1

SUBJECT: Particulate Concentrations During Construction Activities

The following entities were contacted to determine the average particulate concentration encountered at a construction site or areas in which heavy equipment operate on unpaved roadways:

Bay Area Air Quality Management District
State Air Resource Board
Cal OSHA
Fed OSHA
ICF
McVeheil and Monnett
Woodward-Clyde Consultants
EPA's Air Toxics Division
UC Berkeley Environmental Health Science Department
UC Berkeley Energy and Resource Department
UC Berkeley Transportation Institute Library
State Air Resource Board Library
Canadian General Electric Company Limited

The following tables represent the pertinent information gathered in this survey. Air data from three California monitoring stations are reported in Table 1. The first two stations represent particulate concentrations found in areas within one block of heavy construction or where there is heavy construction or activity on unpaved roadways. The air data collected from the third station is considered background for an urban area. For comparison purposes, this table also lists air quality standards and other relevant information.

Tables 2 and 3 list data collected from a transportation study. The report, prepared for the Transportation Board, includes particulate concentrations collected from air monitoring stations located at various distances from construction sites. In all, 151 samples were collected at 14 locations. In addition, samples were collected at 10.1 and 3.5 feet from ground surface. The report concludes that particulate concentrations ranged from 28 $\mu g/m^3$ to 1,400 $\mu g/m^3$ for all locations and activities described, except one location in which jack hammering was being performed.

Table 2 lists air monitoring data for five locations in which a variety of construction activities were performed. Table 3 lists particulate concentrations for specific dates and locations for grading and compacting activities only.

Finally, Dr. Hosein of Canadian General Electric was contacted concerning particulate emissions encountered at a hazardous waste site where PCB-soil cleanup activities were being performed. In Mr. Hosein's study, air monitoring on site was conducted simultaneously with excavation activities. Mr. Hosein explained that no visible dust was present during the heavy construction-excavation process. He stated that particulate air concentrations did not exceed 100 $\mu g/m^3$. PCB concentrations in the soil ranged from 10-200 ppm and only in a small number of samples did they exceed 200 ppm.

It should also be emphasized that mitigation procedures can decrease particulates during construction activities. According to Mr. Wyman Siu, Chief of Air Monitoring for the BAAQMD, and Mr. Bill Monnett of McVeheil and Monnett, mitigation to reduce dust such as watering can reduce particulate emissions by fifty percent.

TABLE 1

TSP
$\mu g/m^3$

Location	High	Low	Geo	Arith	Activity
4th Street/ San Jose[1]	304	32	90.2	___	heavy construction
State Street/ Alviso[2]	201.4	68.7	119	123.6	heavy construction
Alviso (Background)[3]	112.5	15.6	45.7	50.2	

STANDARDS

Background Daily Standard	15-60 $\mu g/m^3$
Federal Daily 24 Hour Standard[4]	150 $\mu g/m^3$
Former Federaly Daily Standard[5]	260 $\mu g/m^3$
Dust Storm[6]	750 $\mu g/m^3$

According to Mr. Wyman Siu of the BAAQMD and Mr. Bill Monnett of McVeheil and Monnett, mitigation to reduce dust such as watering can reduce particulate emission by fifty percent.

TABLE 2

TSP
$\mu g/m^3$

Location	High	Low	Geo	Arith	Distance from Edge of Construction (ft)	Activity
Winter Park/ Florida (#1)	1,163[1]	281	801	943	5	hauling, grading, watering, compacting
	1,055[2]	232	521	591	5	
Winter Park/ Florida (#2)	1,255	457	580	710	16	hauling, compacting, watering
	750	71	249	310	16	
Winter Park/ Florida (#3)	197	37	109	119	82	excavating, grading dumping limerock, hauling, traffic
	259	38	100	110	82	
Winter Park/ Florida (#4)	197	50	100	110	111	excavation, grading, dumping, compacting
	158	38	89	98	111	
Richmond/ Virginia (#12)	930	198	435.5	512	2	grading, compacting, dressing side slope, hauling, excavation
	—	—	—	—	2	

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[1] 10.1 feet above ground surface
[2] 3.5 feet above ground surface

TABLE 3

TSP
$\mu g/m^3$

Location	Date	Concentration TSP	Distance from Ground Surface (ft)	Distance from Edge of Construction (ft)	Activity
Winter Park/ Florida (#1)	10/12	232	10.1	5	Grading, watering hauling, dumping
	4/16	1,163	3.5	5	
	4/16	800	10.1	5	
Winter Park/ Florida (#2)	4/17	155	10.1	51	hauling, dumping, and grading
Winter Park/ Florida (#3)	5/3	153	3.5	82	compacting limestone
		100	10.1		
	5/13	58	3.5	82	compacting and grading
		53	10.1	82	
Winter Park/ Florida (#4)	5/31	197	3.5	111	grading and compacting clay
		259	10.1	111	
Richmond/ Virginia (#12)	7/8	468	(3.5)	2	grading, compacting, dressing side slope

REFERENCES:

[1] California Summary of 1985 Air Quality Data, California Air Resources Board, 4th Street Station, San Jose, CA.

[2] 1987 Reported PM10 and TSP concentrations from an EPA Remedial Investigation, unpublished.

[3] Same as 2.

[4] 40 CFR Part 50 Title 40.

[5] Phone conversation, July 7, 1988, with Wyman Siu, Chief of Air Monitoring for the BAAQMD. Mr. Siu explained that this 260 $\mu g/m^3$ TSP guideline has been replaced with the 150 $\mu g/m$ PM10 guideline. Mr. Siu stated the reason for the change was that 55-60 percent of TSP is PM10.

[6] Phone conversation, July 7, 1988 with Mr. John Suder, an air monitoring professional with Woodward-Clyde Consultants. Mr. Suder stated that this was the highest particulate concentration he had ever encountered.

[7] Effect of Air Pollution Regulations on Highway Construction and Maintenance, Orin Riley, et. al., Fairfield, NJ, for the Transporation Research Board Research Council, Washington, D.C. Pp 13, 59-63. 1974.

[8] Contribution of Adsorbed PCB to Total Airborne PCB during Soil Clean-up. H.R. Hosein, L. Gray and J. McGuire. Canadian General Electric Company Limited; Toronto, Ontario, 1987.

Exhibit F - Response to K/J/C's Cost Estimates for Site Remediation

CAMP DRESSER & McKEE INC

TO: John Vondolleck

FROM: Phil Moyer PM

DATE: June 29, 1988

SUBJECT: Response to Kennedy/Jenks/Chilton Comments 1.29 and 1.30 on the MGM Brakes FS

INTRODUCTION

This memorandum addresses comments 1.29 and 1.30 by Kennedy/Jenks/Chilton (KJC) concerning the cost estimate for the MGM Brakes FS. It is my understanding that KJC believes CDM's estimates are in error and, as a result, are lower than probable construction costs.

It should be noted that "hazardous waste" related cost estimates are prepared with a level of uncertainty that is far greater than any "conventional construction" cost estimate. The two primary reasons for the high level of uncertainty are (1) there is limited costing information available from actual site remediations and (2) an increasing number of innovative technologies lacking full scale development are continuously be added to the list of potential remedies. Hazardous waste related cost estimates are, therefore, prepared with less accuracy. For the final phase of the FS, the FS guidance requires an accuracy of -30 to +50 percent. This level of accuracy is defined by the American Association of Cost Engineers to represent an "order-of-magnitude" accuracy. With this in mind, KJC's and CDM's cost presented in Table 1-1 are within this range. (Note that KJC presented CDM's capping estimate at $1.1 million and it should be $0.9 million).

COMMENT RESPONSE

It is my opinion that comments made by KJC were unfounded, as will become evident during this comment response memorandum.

Comment 1.29 states that the new (1987) Remedial Action Costing Procedures Manual should be used instead of the 1985 version in order to "develop a more realistic cost estimate for each alternative". I have two points to make concerning this comment. First, the only difference between the two versions is that the 1987 version is the final version and includes a cover page and transmittal page, and includes typographical corrections. The second point is that the referenced document provides the philosophy for preparing estimates rather than a "how-to" procedure that ensures more realistic estimates. No cost data or estimating calculations are given in the Manual.

Comment 1.30 addresses the discrepancy between KJC's and CDM's cost estimates. Without having any of KJC's back-up it is impossible to compare the two estimates. In lieu of KJC's back-up, I have prepared Table 1-2 which presents a comparison between unit costs derived from three sources and CDM's unit costs. The three sources are as follows:

Source #1 - "Compendium of Costs of Remedial Technologies at Hazardous Waste Sites," October 1987. This document presents costs in 1982-1983 dollars. The costs shown in Table 1-2 have been escalated 10% to 1988 dollars based on ENR indices.

Source #2 - "Means Site Work Cost Data, 1988", R.S. Means and San Francisco area based "LSI Current Construction Costs, 1988", Lee Saylor, Inc. The costs presented in Table 1-2 have been escalated 120% to account for Level D work and 185% to account for Level C work in accordance with "REM/FIT Cost Estimating Guide", CH2M Hill, 1985.

Source #3 - "Evaluation of the MGM Brakes Site, Volume 1 of 3, September 1986, GCA Technology Division Inc. The 1986 costs presented in Table 1-2 have been escalated 3.6% to 1988 dollars based on ENR indices.

The blank spaces in the table indicated that no unit cost was available for that particular item.

The table indicates that the unit costs used in CDM's estimate are similar to unit costs derived from other sources. It is therefore believed, that CDM's estimate represents a reasonable accurate estimate of probable construction costs. It should also be pointed out that many consultants have been providing the EPA with "ultra-conservative" estimates and the EPA has recently expressed their concern over this and would like to see more realistic estimates.

If you have any comments or questions concerning this memorandum, please feel free to contact me. It may be appropriate to request KJC's cost estimate calculation sheets so that an accurate comparison can be made between the two estimates.

TABLE 1-1

COST COMPARISON

Remediation Alternative for Parcels 1 and 2 Implemented Jointly in 1988	Estimated Capital Cost in Millions Of Dollars	
	K/J/C Estimate	EPA/CDM Estimate
Excavation and Offsite Disposal	$7.1	$5.2
In-situ Fixation	$5.7	$3.6
On-site Fixation	$6.0	$3.4
Capping	$2.6	$0.9

TABLE 1-2

UNIT COST COMPARISONS
($)

Component	Unit of Measure	CDM	Source #1	Source #2	Source[2] #3
Mobilization (As a Percentage of Total Capital Cost)	%	3-15%		5-10%	6-?%[1]
Clearing & Grubbing	AC	4,800		4,800	
Excavation	CY	7	1-5	7	4
Stockpiling/Handling	CY	6			
Backfill/Compaction	CY	3		3	
Import Fill	CY	12		12	
Sheeting/Shoring	SF	11		12	
Final Grading	SY	1	1-3	1	
Revegetation	SY	2	.25-2	2	.50
Resurfacing	SY	12		12	13
Fencing	LF	15		11	
Transport	CY	60-100[3]	2-104		63
Disposal	CY	100-155[3]	13-311		135-163
On-Site Fixation	CY	100[4]			
In-Situ Fixation	CY	150[5]			
RCRA Cap	SF	4	4	5	3
Cap Components					
Topsoil	CY	15	17		
Sand	CY	19	20		
30 mil HDPE	SY	5	3-8	12	
Clay	CY	16	11	17	

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[1] Upper limit could not be determined.

[2] Source #3 also used $75/CY for all earthwork related items.

[3] Telephone quotes from Kettleman Hills (1987 and 1988).

[4] Telephone quote from CDM/Atlanta based on actual remediation costs at Pepper Steel site in Atlanta in 1988. Vendor quotes from July 1987 range from $20-150/CY. Geocon quote in June 1988 was $100-110/CY. All quotes include system mobilization and demobilization.

[5] Telephone quote from IVT in February 1988. Geocon quoted $130-135/CY in June 1988. Geocon performed the first in-situ deep soil mixing process in 1987 with IVT at the General Electric site in Hialeah, Florida under the SITE program. Both quotes include system mobilization and demobiliation.

CAMP DRESSER & McKEE INC

MEMORANDUM

TO: John Wondolleck

FROM: Phil Moyer

DATE: August 8, 1988

SUBJECT: MGM BRAKES COST COMPARISON

This memorandum summarizes the findings of a cost comparison of CDM's and J/K/C's cost estimate for the RCRA Cap alternative (Alt. 6-1 and 6-2 combined) for the MGM Brakes Site. As a general comment, I feel that K/J/C attempted to prepare an estimate of greater accuracy than -30/+50% (i.e. costs for chemical toilets and unit costs to the penny are not acceptable practice for this level of accuracy).

The attachment provides an item by item comparison. The following table compares component costs and is followed by a general discussion on the discrepancies. The footnotes included in the attachment should be referred to for more detail on the discrepancies.

COST COMPONENT	K/J/C's ESTIMATE	CDM's ESTIMATE
MOB/DEMOB	$ 126,900	$159,600
SITE MONITORING	110,800	39,000
EARTHWORK/SITE PREPARATION	85,400	11,100
SITE RESTORATION	59,000	29,100
SOIL CAPPING	761,000	369,200
CASTING BUILDING REMOVAL AND DECONTAMINATION	740,000	92,500
SUBTOTAL	$1,900,000	$701,300
CONTINGENCY	380,000	140,300
ENGINEERING/ ADMINISTRATION	342,000	105,200
TOTAL	$2,600,000	$946,800

MOD/DEMOB

These costs are similar. K/J/C did have a mathematical error of approximately +$10,000 for this component (i.e. K/J/C showed $137,000 and actual subtotal is $126,900). The total cost discrepancy for this component is -$22,700.

SITE MONITORING

K/J/C's estimate for this component is 284% higher than CDM's estimate. Two reasons for this discrepancy are (1) K/J/C has a +$5,000 error in using CDM's unit cost for Item 2a and (2) K/J/C included soil samping under the buidling and during capping at +$66,800. I don't believe that the sampling under the building is necessary; only confirmation sampling around the perimeter of the cap. There are physical limitations which will limit the extent of the cap. Furthermore, using CDM's capping cost of $4/SF, the $66,800 could be used to cap an additional 0.4 acres which would increase the capped area by nearly 20%. The total cost discrepancy for this component is +$71,800.

EARTHWORK/SITE PREPARATION

The major discrepancy of this component is $63,000 for backfill and compaction of imported fill. This was not included in CDM's estimate because the need for such has not been identified and regrading of the site may be all that is necessary. $10,000 was also added by K/J/C for temporary surface drainage control. This is extremely high at approximately $5,000/AC. A perimeter ditch could probably be constructed for under $1,000. The total cost discrepancy for this component is +$74,300.

SITE RESTORATION

K/J/C included $29,000 for concrete drainage ditches. I do not know why concrete-lined ditches were estimated; they do not seem necessary for a cap. If they are, they become a final design issue and should be covered by the contingency. Though it has a minor impact on cost, K/J/C used 10,000 SY for site restoration and CDM used 9,700 SY. The total cost discrepancy for this component is +$29,900.

SOIL CAPPING

The component provides the second highest discrepancy dollar-wise at $391,800. K/J/C's base unit cost for a RCRA cap is approximately $7/SF versus CDM's at $4/SF. I do not have K/J/C's back-up, but CDM's cost was calculated from material cost quotes, estimating guides, and information from other sites. K/J/C added 15% for unknown reasons which increased their unit cost to $8.25/SF. This increase coupled with a 20% contingency added to the total capital cost results in a component contingency of 38%. This is "excessive" considering the RCRA cap is nothing more than earthwork.

CASTING BUILDING REMOVAL AND DISPOSAL

This component has the highest percentage and dollar discrepancy at 800% and +$647,500, respectively. I believe the two primary reasons for the discrepancy are (1) K/J/C's estimate included demolition of the entire building and concrete and (2) K/J/C used $250,000 for equipment decontamination which CDM assumed MGM Brakes would be responsible for prior to demolition of the building. K/J/C also included off-site disposal of all concrete as hazardous waste, while CDM assumed it would remain on-site under the cap. CDM assumed partial demolition of 5,000 SF of the building. I do not understand why equipment decontamination is so high at $250,000, but I have no details to comment further.

INDIRECT CAPITAL COSTS

Indirect capital costs included engineering and design, contingencies, and bonds. K/J/C and CDM both used a 20% contingency. I feel that K/J/C's could be lower given the level of detail of the estimate. K/J/C calculated engineering and design at 15% of the total direct cost plus the 20% contingency. This is not standard practice. The 15% engineering and design is applied to the total direct cost. K/J/C's method results in a net engineering and design percentage of 18% or an additional +$57,000.

SUMMARY

I believe this memorandum provides the justification necesary. If you need further assistance, feel free to contact me. I also reviewed the other estimates briefly and have similar comments. In addition, I believe that K/J/C's conversion of CY to TN for the other estimates results in a large portion of those discrepancies.

FOOTNOTES:

1. K/J/C totalled this item at $137,000, actual total is $126,900.

2. K/J/C stated that $29,000 is from CDM estimate, however, CDM's estimate is $24,000.

3. Why is soil sampling under the building necessary when the area will be capped? Perimeter sampling for confirmation of absense of PCBs should be all that is required.

4. The CDM estimate included as part of the contingency confirmation sampling during cleanup.

5. A concrete-line ditch does not appear appropriate for the cap alternative. A temporary ditch during construction of the cap and a site grading following construction should be sufficient to address drainage control.

6. EPA did not estimate volume of fill for minor soil excavation. Filling of the minor excavation or site regrading will be performed depending on anticipated site uses.

7. For CDM's estimate, I assumed that this had already beened performed by by MGM Brakes and was not included. My feeling is that this cost is extremely high. When or if MGM does an annual equipment cleaning and overhaul does it really cost $250,000?

8. In CDM's estimate, I was told to figure on removing a portion of the building which was 58,400 CF, K/J/C used 391,000 CF. Is this the entire building? The building removal volume I used was a 50'x100' floor area with 12' walls (exterior dimensions).

9. Similar comment as Footnote 8. K/J/C used 22,400 SF, CDM's estimate is based on 5,000 SF.

10. This item included in Item 4c cost. $230/CY is extremely high for disposal. Does this include disposal of building demolition and transport?

11. This item included in Item 4c cost. To use unit costs rounded to the penny (i.e. $16.40/LF) for unit costs over $1 at this level of estimating and small quanitity is not appropriate. This indicates that K/J/C's estimate is intended to be more accurate than -30/+50%.

12. This item included in Item 4c cost.

13. CDM's estimate does not include this item. I was not informed that this needed to be removed. Does it?

14. This is a contingency item in CDM's estimates if we do not have a quantity to base it on.

15. What is the justification for a 15 percent mark up?

16. CDM's estimate includes this cost in Item 5a. What is the justification for a 15 percent mark up?

17. K/J/C used 10,000 SY, CDM used 9700 SY.

18. What are the concrete drainage ditches for?

19. CDM's total cost shown here (from spreadsheet) is slightly higher than the total of subtotals (i.e. $701,300 vs $700,500) because CDM's estimate included a few other items such as irrigation that were not included in K/J/C's estimate.

20. Indirect capital costs such as engineering and design, contingencies, and bonds are calculated as percentages of direct capital costs (i.e. Item No. 7). K/J/C calculates the contingency from the direct capital cost, adds the two together, and then calculates 15% of the new subtotal capital cost (Item 9) for enginering and design. This results in $57,000 additional profit for the engineering firm. K/J/C should utilize the Remedial Action Costing Procedures Manual (EPA 1985 or 1987).

598.8:8

COST COMPAARISON OF ALTERNATIVE 6-1 AND ALTERNATIVE 6-2 COMBINED

KJC ITEM ITEM NO.		DESCRIPTION	QUANTITY	KJC UNIT COST	CDM UNIT COST	KJC TOTAL COST	CDM TOTAL COST
1	(a)	EQUIPMENT MOB/DEMOB	4 EA.	N.A.	1,000	3,000	4,000
	(b)	SECURITY/FENCING, ETC	1 LS	21,000	42,000	21,000	42,000
	(c)	CONT. STORAGE AREA	?	?	?	500	3,200
	(d)	PERSONNEL DECON	?	?	?	7,000	11,400
	(e)&(f)	EQUIPMENT DECON	?	?	?	20,500	28,000
	(g)	DEMOLISH CONT. AREA	1 LS	2,500	N.A.	2,500	N.A.
	(h)	DEMOLISH NON-CONT AREA	1 LS	2,000	N.A.	2,000	N.A.
	(i)	DECON EQUIPMENT	1 LS	7,000	N.A.	7,000	N.A.
	(j)	PERMITS	1 LS	8,000	20,000	8,000	20,000
	(k)	CONTRACTOR REPORTS	1 LS	12,000	12,000	12,000	12,000
	(l)	IH/SO	?	30,000	6,000	30,000	24,000
	(m)	BONDS, INS., INDEMNIFICATION	1 LS	10,000	N.A.	10,000	N.A.
	(n)	UTILITY CONNECT/DISCONNECT	1 LS	3,000	15,000	3,000	15,000
	(o)	CHEMICAL TOILETS	5 MO	80	N.A.	400	N.A.
		SUBTOTAL - MOB/DEMOB				$126,900[1] ($137,000)	$159,600
2	(a)	AIR MONITORING INCLUDING BASELINE SAMPLING[2]	LS	29,000	24,000	29,000	24,000
	(b)(1)	SAMPLING UNDER BUILDING[3]	LS	36,800	N.A.	36,800	N.A.
	(b)(2)	SOIL SAMPLING DURING CAPPING[4]	50 EA	600	600	30,000	N.A.
	(c)	GROUNDWATER SAMPLILNG	30 EA	500	500	15,000	15,000
		SUBTOTAL - SITE MONITORING				$110,800	$39,000
3	(a)	LAYOUT AREAS TO BE CAPPED	?	1,000	1,500	1,000	1,500
	(b)	CLEARING, GRUBBING, AND DISPOSAL OF CLEARED MATERIAL	2 AC	4,800	4,800	9,600	9,600
	(c)	TEMPORARY SURFACE DRAINAGE CONTROL[5]	LS	10,000	N.A.	10,000	N.A.
	(d)	REMOVE AND DISPOSE OF CONCRETE PAVEMENT	60 CY	30	N.A.	1,800	N.A.
	(e)	BACKFILL/COMPACTION OF IMPORTED FILL[6]	4200 CY	15	N.A.	63,000	[illegible]A.
		SUBTOTAL - EARTHWORK/SITE PREPARATION AN[illegible]AINTENANCE				$85,400	$11,100

COST COMPAARISON OF ALTERNATIVE 6-1 AND ALTERNATIVE 6-2 COMBINED

KJC ITEM ITEM NO.		DESCRIPTION	QUANTITY	KJC UNIT COST	CDM UNIT COST	KJC TOTAL COST	CDM TOTAL COST
4	(a)	EQUIPMENT AND MISCELLANEOUS DECONTAMINATION AND REMOVAL[7]	1 LS	250,000	N.A.	250,000	N.A.
	(b)	BUILDING DEMOLITION[8]	?	0.18	0.30	70,400	17,500
	(c)	CONCRETE FLOOR DEMOLITION[9]	?	5.25	15.00	117,600	75,000
	(d)	CONCRETE FLOOR DISPOSAL[10]	593 CY	230	N.A.	136,000	N.A.
	(e)	FOOTING DEMOLITION[11]	728 LF	16.40	N.A.	12,000	N.A.
	(f)	FOOTING DISPOSAL[12]	120 CY	230	N.A.	28,000	N.A.
	(g)	TRUCK RAMP DEMOLITION/ DISPOSAL[13]	LS	40,000	N.A.	40,000	N.A.
	(n)	MISCELLANEOUS ITEMS TO BE DEMOLISHED[14]	LS	86,000	N.A.	86,000	N.A.
		SUBTOTAL - CASTING BUILDING REMOVAL AND DECONTAMINATION				$740,000	$92,500
5	(a)	CONSTRUCTION OF RCRA CAP[15]	92,300 SF	7	4	646,100	369,200
	(b)	CONSTRUCTION OF A SOIL COVER[16]	92,300 SF	1.25	N.A.	115,000	N.A.
		SUBTOTAL - SOIL CAPPING				$761,000	$369,200
6	(a)	FINAL GRADING[17]	?	1	1	10,0000	9,700
	(b)	HYDROSEEDING[17]	?	2	2	20,000	19,400
	(c)	CONCRETE DRAINAGE DITCHES[18]	1000 LF	29	N.A.	29,000	N.A.
		SUBTOTAL - SITE RESTORATION				$59,000	$29,000
7		SUBTOTAL[19]	——	——	——	$1,900,000	$701,300
8		CONTINGENCY[20]	20%	——	——	380,000	140,300
9		SUBTOTAL[20]	——	——	——	2,280,000	N.A.
10		ENGINEERING & ADMINSTRATION[20]	15%	——	——	342,000	105,200
11		TOTAL	——	——	——	$2,600,000	$946,800

Exhibit C - Record of Communication Regarding Soil Volume
Increase for Fixation

CAMP DRESSER & McKEE INC

MEMORANDUM

TO: John Wondolleck
FROM: Sue A. Loyd
DATE: August 23, 1988
DOCUMENT NO. T598-C09-IO-CJKD-1
SUBJECT: Fixation - Soil Volume

Mr. Fred Mullins of Qual Tech was contacted on August 22, 1988. Qual Tech performs fixation on soil at the Pepper's Steel Superfund Site. According to Mr. Mullins, the soil type at the Pepper's Steel location is a loose, sandy loam, with a moderate silt content. Mr. Mullins explained that the volume increase, resulting from the fixation of this soil, is less than 1 percent. In contrast, larger soil volumes result when fixation is applied to clay type soils. Mr. Mullins explained that treatment performed on a heavy clay Mississippi soil increased overall volume by 18 to 20 percent.

598.8:13